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S. N. A. JACOBS, F.R.E.S.

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*Edited by* S. N. A. JACOBS, F.R.E.S.

*with the assistance of*

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# Controlled Temperature Experiments with *Vanessa atalanta* L., *V. cardui* L. and *Aglais urticae* L.

By C. M. R. PITMAN

Although it is not intended that this series of experiments should be considered as anything like a conclusive report gleaned from the effect of varying temperatures upon certain species of butterflies, and although the experiments have been conducted with meticulous care, it is obvious that much more information and experiment would be necessary before one could really expect to produce striking varietal forms, either in pattern or ground colour with any hope of consistency. These experiments were carried out in temperatures which might be, and most probably are, experienced in nature, with the exception of one experiment in which pupae were subjected to a temperature of  $-15^{\circ}$ , and this proved fatal, as most shock experiments do.

Inconclusive as these experiments appear, they were performed most conscientiously in an endeavour to obtain the optima of temperatures and conditions for the purpose of breeding varieties. The material used was nearly always either pre-pupal larvae or newly formed pupae, and although it must be confessed that the results obtained are most disappointing, in an effort to explain the lack of success, it would seem reasonable to suppose that there are other forces or factors at work beside temperatures, which are undoubtedly contributory towards producing variation. It is generally known and accepted that most mutations or variations are of a genetical nature, and it is also possible that under certain conditions these factors will be much more active, especially when subjected to abnormal temperatures and conditions. Many popular text books available to-day on the subject of butterflies figure insects that are loosely described as temperature bred variations, but it is difficult to find any information as to the degree or duration of temperature to which the insects have to be exposed. According to Dr. E. B. Ford (*Butterflies*, 1947), by subjecting the larvae to a period of cold just prior to pupation, a greater amount of melanin is produced and spread over certain areas of the wings, whereas on the other hand, by subjecting larvae to heat treatment, it has been noted that the melanin is reduced and the heat promotes a greater amount of tyrosin, producing imagines of a much lighter colour.

To illustrate this, examples are shown on Pl. 35: Fig. 4 depicts *A. urticae* which had been reared in an incubator, while Fig. 5 shows the same species which had been kept in an ice chest during the latter part of its larval, and pupal life. Now this is most interesting, because in my experiments all the material at a temperature of  $6^{\circ}$  C. became completely torpid, larvae refused to eat and others in an advanced stage preparing for pupation, refused to continue development until returned to room temperature.

It is unfortunate that the vital information as to time and temperature is missing, and it is a pity that no references are given (apart from Dr. Kettlewell's experiments) and it is largely because of this lack of information on these points, which appear to be critical,

that I decided to conduct these experiments in an effort to gain some definite data which would explain the purpose of temperature breeding, and to seek the necessary information, so elusive to amateurs, who might be anxious to try temperature experiments with very limited knowledge and equipment.

It is interesting to observe that from time to time such variations as those figured by Dr. Ford have occurred in my breeding cages under what was believed to be natural conditions and temperatures, but there may have been environmental fluctuations of temperature or moisture at a critical stage of development of the larva or pupa. One peculiar *urticae*, which at first glance appeared to be a rich greenish hue all over, but which unfortunately faded soon after it had been set, is believed to have acquired this strange colour on account of the unnatural conditions of rearing, the pupa having been formed at the bottom of the cage amongst damp debris and vegetation accumulated there, and maybe some form of chlorophyll was absorbed by the insect. Other aberrations similar to those figured have also been bred under normal conditions and have also been captured wild over a very wide area.

There is a very interesting paper by Dr. H. B. D. Kettlewell (*Proc. South Lond. Ent. & Nat. Hist Soc.*, 1943-4) which is recommended to all who have an interest in temperature breeding, on a series of heat experiments with *Heliothis peltigera* and *Panaxia dominula*. It gives details of temperature, time and humidity factors, and is the only work of the kind coming to my notice giving these valuable points. However, similar procedures were applied to the butterflies in my experiments with completely negative results. Dr. Kettlewell also mentions the actiphase and passiphase periods and some interesting observations concerning a colour change noticeable at the eye of the pupa at the critical period of development. Although these impressive experiments have established some valuable and most interesting data, it is to be remembered, as the author points out, that *peltigera*, which produced some interesting colour forms during these experiments, is most prone to colour variation in its different localities, and is most inconsistent in its life history, which varies with its environment. With *dominula* an aberrant strain was purposely selected for the experiment, so that both species would probably have shown variation under natural conditions. Therefore, under extreme conditions of temperature, mutant genes were activated, which after all does not give us a completely satisfactory answer or the necessary information required to solve the problems that arise when we consider temperature breeding in its true sense for the purpose of variety breeding.

The following temperatures were used during my experiments and, with the exception of outside and room temperatures, remained constant throughout the whole of the experiments. 4° C.=39.2° F., 6° C.=42.8° F., 30° C.=86° F., 37° C.=98.6° F.; room temperature 22° C.=71.6° F., 0° C.=32° F.

#### V. ATALANTA

These larvae were collected at intervals feeding on stinging nettles growing at the top of a hill near Salisbury. It is quite possible that they were the progeny of one female only. Most of the larvae were very dark in colour with pale lemon yellow markings along the sides.



*Experiment No. 1**Control*

3 larvae collected in final instar 26.vii.57, at room temperature until pupation and emergence 12.viii.57. Two typical and one parasitized.

*Experiment No. 2**Cold 6° C.*

26 larvae collected 26.vii.57 (14 in final instar, 12 in second) put at 6° C., 27.vii.57; activity ceased. Given room temperature for one hour 28.vii, feeding commenced at once. Smaller larvae moulted. Returned to 6° C., and process repeated each day until 2.viii; 6 larvae preparing for pupation at room temperature were put into a separate box and given 6° C. and pupated 11.viii.1957. 6 others ready for pupation were given 37° C. and pupated 8.viii, but only three with success; larvae turned pinkish at this temperature; one emergence typical, 2 pupae died at this temperature as did 3 larvae remaining. 16 larvae were kept at 6° C., apart from room temperature for one hour daily, until they were ready for pupation which started 14.viii, with emergences from 20th to 29th August, all of which were typical, with three larvae parasitized.

*Experiment No. 3**Heat 30° C.*

7 larvae collected 5.viii.57, 4 in final instar (a), 3 in second (b), reared at 30° C. until emergence. (a) pupated 7.viii, (b) 9.viii, typical emergences 12th to 19th August; one parasitized.

*Experiment No. 4**Cold 4° C.*

8 boxes each containing larvae collected 6.viii.57, all in final instar and near pre-pupal stage, kept at 4° C. Every two days one box removed to room temperature until the last box was taken.

Box No. 1. 3 larvae hung up ready for pupation and one ready to hang up: submitted to 4° 6.viii and put at room temperature 8.viii.

Box No. 2. 3 larvae hung up for pupation, removed to room temperature 10.viii.

Box No. 3. 3 larvae hung up for pupation, removed to room temperature 12.viii.

Box No. 4. 3 larvae hung up for pupation, removed to room temperature 14.viii.

Box No. 5. 3 larvae and 2 pupae, removed to room temperature 16.viii.

Box No. 6. 4 larvae and 3 pupae, removed to room temperature 18.viii. This box was returned to 4° C. again and not given room temperature again until 3 days later.

Box No. 7. 3 larvae hung up for pupation, removed to room temperature 22.viii.

Box No. 8. 3 larvae hung up for pupation, removed to room temperature 24.viii.

In all there were 26 emergences, all typical but many very small imagines. 4 died in pupal stage; some larvae also decreased in size during the course of the experiment.

*Experiment No. 5**Cold 6° C.*

6 larvae collected 7.viii.1957, kept at room temperature until pupation commenced, then put at 6° C.; box (a) with 3 larvae for one week; box (b) with 3 larvae for 12 days, then returned to room temperature.

Box (a) 2 imagines, one pupa parasitized; box (b) 3 emergences. All typical.

*Experiment No. 6*                      *Cold 0° C.*

4 pupae reared at outside temperature 2.viii.57. Exposed to 0° C. for three days when 24 hours old, then room temperature until emergence: 3 typical imagines, 1 pupa died.

*Experiment No. 6a*                      *Heat 37° C.*

5 larvae collected in process of pupation 13.viii.1957, kept at 37° for one day, then at 6° for one day, then room temperature until emergence. 4 imagines, all typical; 2 died while pupating at 37°.

*Experiment No. 6b*                      *Heat approx. 30° with humidity*

6 prepupal larvae kept in a steamy atmosphere above a stove from 11.viii.1957 until pupation on the same day resulted in four emergences at room temperature, 2 typical, 2 deformed, and two were parasitized. One of the deformed specimens had a shortened left forewing with a jumbled pattern.

V. *CARDUI*

It may be of interest to mention that these larvae were collected at the same time as the *atalanta* also from the same nettles. So closely did they resemble the dark form of *atalanta* larvae in colour and behaviour that it was not until the larvae were pupating that they were identified.

*Experiment No. 7*                      *Control*

3 larvae collected in second instar 26.vii.1957, kept at room temperature until emergence 14.viii. All typical.

*Experiment No. 8*                      *Cold 6° C.*

6 larvae collected in final instar 6.viii.1957 and ready to pupate, put at 6° C. for one week, then room temperature until emergence. All imagines typical.

*Experiment No. 9*                      *Heat 37° C.*

6 larvae ready for pupation collected 6.viii.1957, subjected to 37° C. for one day, when pupation took place, then 6° C. for 2 days and returned to room temperature for emergence. 3 typical imagines and 3 died in prepupal stage.

*Experiment No. 10*                      *Heat 30° C.*

2 larvae collected 5.viii.1957 in second instar reared at 30° C. until emergence. Both typical.

*Experiment No. 11*                      *Cold 4° C.*

4 larvae ready for pupation put into separate boxes. Box (a) in 4° C. for four days; box (b) 4° C. for 6 days; box (c) 4° C. for 8 days and box (d) 4° C. for 10 days. 3 typical imagines. Box (c) died as pupa. The technique was as in Experiment No. 4.

*Experiment No. 12*                      *Heat 37° C.*

5 larvae preparing for pupation collected wild 13.viii.1957, given 37° C. for 2 days. Two died 14.viii; the remaining 3 produced typical imagines.

*A. URTICAE*

Amongst the imagines reared during the experiments with this species, some showed minor variation as found in the wild state, which is not surprising in view of the large number of larvae reared and the wider area over which they were collected, which must have involved a diversity of parents. It is not considered that these forms were the result of temperatures. Various broods of larvae varied in colour from black to yellow; extremes of colour were sought out but the resultant imagines were disappointingly typical.

*Experiment No. 13* *Control*

200 larvae collected 6.viii.1957 in second instar, reared at room temperature. 178 normal imagines emerged; the remainder died before pupation, but in final instar.

*Experiment No. 14* *Cold 4° C.*

Brood of small larvae collected about two days old 24.viii.57 and put in 4° C. for three days then one hour each day at room temperature. First moult 28.viii; moults very irregular. Second started 31.viii. Given room temperature for one day 6.ix; some still in first instar. First to pupate 20.ix, and emergences from 25.ix to 7.x. All imagines very small but colour and pattern normal. Many larvae lost during moults. All pupated at room temperature and left at this temperature for emergence. Only 85 imagines in all.

*Experiment No. 15* *Cold 4° C.*

10 boxes each containing 10 prepupal larvae collected 24.viii.1957 given 4° C. for two days before first box was removed to room temperature, and thereafter a box was taken every two days and placed in room temperature. The same method was employed as in Experiment No. 4. 71 very small, but otherwise typical imagines emerged; all deaths were in prepupal stage.

*Experiment No. 16* *Heat 30° C.*

50 first instar larvae collected 20.viii.1957 and kept at 30° C. until emergence. Pupation commenced 6.ix, and 45 small pupae were obtained; emergence commenced 12.ix, and 42 small but otherwise typical imagines were obtained.

*Experiment No. 17* *Cold 6° C.*

50 full-fed larvae collected 28.vii.1957, kept at room temperature first night and then subjected to 6° C. for two days. 10 were taken to room temperature 2.viii, and pupated 6/8.ix, producing 9 typical imagines. 10 as prepupae put at 6° C. 2.viii, removed to room temperature 10.viii. 6 typical imagines. 10 given 30° C. 2.viii, pupated 3.viii, resulted in 10 typical imagines. 10 at 37° C. 2.viii, pupated same day; 7 died as prepupae and 3 typical imagines emerged. 10 put at 4° C. until 10.viii, then room temperature until pupation 13.viii; 8 normal imagines.

*Experiment No. 18* *Heat 30° C.*

50 larvae collected in second instar 29.vii.1957 put at 30° C. until emergence; pupation started 6.viii and from the resulting 43 small pupae, 39 small but otherwise typical imagines emerged 12.viii.

*Experiment No. 19**Cold 0° C.*

12 two-day pupae reared at outside temperature put in 0° C. for 10 days, then to room temperature for emergence; 9 typical imagines; 3 died as pupae.

*Experiment No. 20**Heat 37° C.*

50 larvae raised at outside temperature given 37° when near prepupal stage. After 8 hours, many were hung up ready for pupation, and many had turned a very pinkish colour: 8.viii, 8 had pupated, 11 were turning, 12 died 6.viii; 7 more died 10.viii, 8 more prepupae; 4 more deaths occurred later, leaving 27 pupae which produced 17 imagines of typical appearance, and 10 deformities.

*Experiment No. 21**Cold -15° C.*

Although shock treatment has become a popular term in connection with temperature experiments, it is another aspect of breeding for varieties that seems to have been unsatisfactorily explored. In the following experiment it is quite obvious that the temperature was much too severe, with disastrous results. It would also appear that anything over a temperature of 37° C. would be fatal to the three species placed in this heat. Box 1a, containing 18 prepupal larvae from outside were placed in 6° C. for one hour and then dropped to -15° C. for 4 hours, then back to 6° C. for 24 hours and then to room temperature, but all had died in the same condition as when exposed to the cold. Box 1b contained 12 prepupal larvae from outside, placed in -10° C. for 2 hours, then 6° C. for 8 hours, but all had died at -10°.

*Experiment No. 22. Humidity at approximately 30° C.*

6 prepupal larvae in steamy atmosphere above stove, kept there until pupation, then at room temperature. 6 typical imagines resulted.

## SUMMARY

From these elementary experiments of heat and cold, negative as the results may be, in which larvae and pupae were subjected over a staggered period without obtaining any obvious results in either pattern or ground colour variations, it would seem certain that there must be other factors involved, furthermore, factors of other than genetical character, although it seems of vital importance that mutant genes must be present to produce any variation at all.

For the purpose of a temperature experiment it would seem not only desirable, but essential, to obtain maximum and minimum temperatures to which one can safely expose the larvae and pupae, and also a definite period of time for which the insect can endure the experiment, and it is obvious that circumstances vary tremendously with the insects selected for experiment, unless one resorts to shock treatment which either proves fatal or causes a large number of crippled imagines. Alternatively, one might eventually breed a strain that was capable of enduring the desired temperature for the desired time.

Temperature experiments and temperature variations are generally accepted nowadays, but there seems to be very little information available on the subject which gives the critical information one must have

for experimenting, such as the vital degrees of temperature or period of time required for producing variation, or the suitable degree necessary to activate the mutant genes.

During my experiments it was noted that a temperature of 6° C. was the minimum normal species could endure without becoming inactive, both larvae and pupae becoming torpid at this temperature, whilst 37° C. was the absolute maximum and many larvae and pupae died at this temperature even though the experiments were carried out in a humid atmosphere.

It must be borne in mind that these inconclusive experiments were neither expected nor intended to produce a final conclusion; all that was contemplated was by elementary experiment to find the optimum conditions for breeding variations. So far, apart from examples with a certain amount of bleaching or a deficiency of scaling or a colour change probably due to a chemical condition in the environment, the chances of obtaining extreme variations by temperature variations seem almost as remote as the chance one might expect from a batch of wild larvae bred under normal conditions unless one is fortunate enough to collect a brood in which a mutant gene is already functioning.

It might be of interest to mention that special attention was given in looking for an excess of melanin or tyrosin as a result of experiments but nothing more than normal was noted.

Admittedly very little of importance has been achieved by my experiments, and nothing has been claimed. It was considered, however, that in view of the increasing interest in temperature breeding in the present days, and the popular interest taken in some of the striking examples exhibited as temperature varieties, the results of my efforts, negative though they are, may be of interest to those considering temperature breeding in the future. Unfortunately, with such limited material as was employed during the trials, it would be difficult to arrive at anything definite and it is at once obvious that a great many more larvae and pupae would have to be used before any satisfactory knowledge is acquired.

In conclusion, it would be fair to point out that the experiments, if repeated, might give quite a different answer; this circumstance is unavoidable when wild larvae are used, as certain unknown factors are bound to be involved. Fine variations have been bred from wild larvae under most natural conditions, so it would appear, in view of the poor results obtained by the temperatures to which my material was exposed, these temperatures would seem to have little or no effect on a batch of normal larvae. It is true that amongst those bred were some that resembled minor forms or variations to be found in the wild state, but these were not looked for or counted in terms of a variety resulting from temperature breeding.

If anyone with a greater skill or experience of the techniques of temperature breeding could find the time and inclination to enlighten us a little more on this subject, I have no doubt that many of the younger collectors, as well as some not so young, who are interested in the subject, and are working with the limited use of a refrigerator and perhaps a home-made incubator, would be most grateful.

For myself, it remains to say that it is quite possible that somewhere during the course of my experiments, mistakes may have occurred, although in such simple trials errors would seem to be unlikely, but,

if this be so, your tolerance is asked. Nothing original is claimed for any of these experiments, all of which have probably been carried out before with more satisfying results. Unfortunately, my very limited efforts to obtain references to works giving any enlightenment on this subject have been unrewarding apart from those already mentioned, and in these circumstances I apologise to readers who have already discovered and studied existing treatises on temperature experiments for the purpose of obtaining variations.

## Notes for 1959 from East Anglia and Elsewhere

By The Rev. G. A. FORD

A few observations from this area may be a help to other collectors and assist in building up an overall picture of entomology as at present pertaining. As so often happens, the numbers of species and of individuals of the same observed, showed a decline, but there are a few items of interest to record.

Firstly, the colony of *Hadena compta* Fabr. in my garden continues to flourish, although I sent away nearly fifty pupae this autumn in response to various requests. I have run a Robinson m.v. trap in the garden throughout the year, and new species observed for the first time at light include the muslin, *Cynia mendica* Cl., the pine hawk, *Hyloicus pinastri* L., and the convolvulus hawk, *Herse convolvuli* L. The only other species of note were *Drymonia ruficornis* Hufn. (*chaonia* Hübn.), very few; sallow kitten, *Harpyia furcula* Cl., 18.v and 9.viii; poplar kitten, *H. hermelina* Goze, 11.v and 15.v; *Crucullia chamomillae* Schiff., 12.v and 15.v. Many more *Eumichtis adusta* Esp. than usual turned up and a few *Polia hepatica* Cl. put in an appearance.

June 17th was a hawk night! Privet, *Sphinx ligustri* L.; lime, *Mimas tiliae* L.; elephant, *Deilephila elpenor* L., and small elephant, *D. porcellus* L. *Tethea ocularis* L. (*octogesima* Hübn.), which is getting darker every year, also turned up. On 23rd June I took the white satin, *Leucoma salicis* L. (I usually get one per annum), also *Hadena lepida* Esp. (*carpophaga* Bork.) and *Comibaena pustulata* Hufn. 2nd July brought *Pyrrhia umbra* Hufn. and *T. ocularis*, and on the 10th *H. compta*. On 9th August I took *Cosmia diffinis* L., the second in 15 years; on the 14th *Plusia festucae* L., and on the 20th *Hadena suasa* Schiff. (*dissimilis* Kn.). On 6th September I took a female August thorn, *Ennomos quercinaria* Hufn., *Atethmia xerampelina* Esp. (worn) few this year. 9th September brought *Galleria mellonella* L., and the 30th, *convolvuli* ♀; *mellonella*, I gather, is now scarce. We have many bees and much honey in the church tower nearby. In fact, when the chancel roof was recently relined with copper, I was requested to "quieten the bees" to facilitate—actually make possible—the work. Fortunately, I was able to secure the services of some local experts who, however, were unable to prolong this state of affairs for more than two days—long enough as it proved. Many more bees then moved in! The honey, a vast quantity, could be seen, but not got at. Alas! for *mellonella*, I thought. Having at last proved that it was indeed installed in the roof by the fact that not only did it come to the trap—but also I found two or three dead specimens on the sill of the east window under the

bees' H.Q. I had thought of running the m.v. trap inside the building, which might lead the villagers to believe that the building was on fire—however, I am told that this species is such an enemy of bee keepers that my eccentric action would be excused on the grounds that it was doing really useful work.

Now for my two prizes; for many years I have hoped for *convolvuli* and *Acherontia atropos* L. at light here. Often do I read that children, farm workers, etc., bring to fortunate collectors oleander hawks in perfect condition, *Celerio livornica* Esp. found sitting on pavements and various other rarities, but my fate has been to receive buff-tips in match boxes from the village constable and privet hawks ad nauseam, which I was variously requested by child captors to stuff or press! I must confess, I have received (after previous coaching) *Sesia apiformis* Cl., minus antennae, legs and nearly everything, newly emerged and sliding about in a jam jar, and last year Mrs. Yaxley, of the Cross Keys Inn, Dilham Norfolk, posted me a *Cossus cossus* L. larva; it arrived in a small cardboard box on the very point of walking out through the hole it had gnawed in transit; nearly as bad as when a tin of "sugar" exploded in the post a year or so ago (and sugared the mail that day). This creature was definitely mentally disturbed! It constructed five wooden cocoons—then finally one of earth, which partially collapsed—and so it emerged a complete cripple!

However, at long last, my ship has come home: on 4th September, one Derek Miller, who is employed by Alderman S. A. Taylor, a well known nearby farmer, arrived at the front door with a large cardboard box, big enough to contain a top hat! At first I thought someone was sending me flowers; odd, but one does receive strange gifts. However, it turned out to be two huge *atropos* larvae, one banana yellow and the other bright green, found feeding on jasmine (for long this species was called the jasmine hawk), but I understand it has not been found feeding on this plant for about fifty years. They had been found on the jasmine growing round the back porch of the farm house. They were received with joy; they were named Sam, after the farmer, and Derek, and were at once housed in a full sized glass topped biscuit tin: next day a further specimen was reported by telephone, crawling on the ground—before it had sped more than a few yards, my younger son had sped to the spot by motor cycle and boxed it—we may be rustic here, but we are highly organized! It proved to be a dark brown specimen; I began to feel a little bewildered by all this colour variation. It was allotted the last available glass topped biscuit tin and named "junior" by a friend at the local garage who takes a mild interest in my hobby.

The next procedure, as time was short, and *atropos* had a tight schedule, was to build an incubator—no hot cupboards for clergy in outdated mansions—John Betjeman has described my present residence in a recent book as "Swiss Cottage Perpendicular". We only have our cupboard hot twice a week, and it is right at the top of the house. The said incubator was constructed out of one of the biscuit tins: it was placed on a small tripod, purchased years ago at a jumble sale for this very purpose (I do believe in planning ahead). Under the tripod was placed a car safety lamp—a hole was bored in the base of the tin and a central flue was constructed to go right through the box and out by

the lid. The said flue consisted of three cigarette tins soldered together. The sides were lined with building board; earth, moss and bulb fibre were added to accommodate the larvae. Without the central flue, results were poor, but with the flue in operation, the temperature could be regulated accurately to a maximum of 85° F.

The larvae buried 2 and 4 September, "Junior" within hours of capture, and thanks to a tip from Brigadier Warry, I placed the tins in sunlight at this stage—the inmates soon took cover. Two emerged (a pair) on 3rd and 4th October; one died.

The other capture which gave me great satisfaction was a perfect female *convolvuli* in the trap on 30th September. Until this, the nearest record seems to have been a few seen at a searchlight beam during the war, near Bishop's Stortford.

My last (or nearly) note must be cryptic. I cannot take much credit for turning up *Arenostola bondii* Knaggs (*morrisii* Dale) in Dorset again (Why the latter name? which I thought was equivalent to *arcuosa* Haw.) as I had read of the locality as long ago as 1937, but was unable to pay the place a visit until 1958. I admit the old locality has been ruined by land-slides, but a new spot, not very far away, was found without much searching.

But this year's discovery is without any such assistance other than perseverance and thought; it is not cleverness, but I try to adopt as a maxim: "Search for your quarry until you are ready to drop, and then, Oh, boy! start all over again"! Well, I have without a shadow of doubt re-discovered one of the great rarities of Cambridgeshire, which has been officially recorded as extinct in the county for 19 years (this is a hint). To publish the details now would lead to its almost certain extinction for the second time, so I have deemed it wise not to divulge any information to a soul for the present until I see next year what state the colony is in.

News from "the Breck", according to my experience, is not good. I found a good spot for *Heliothis dipsacea* L. (not seen by day for years). I took a few *Anepia irregularis* Hufn. larvae in its remote and unpropitious looking habitat. The *Emmelia sulphuralis* L. (*trabealis* Scop.) locality is destroyed and there are no signs of *Scopula rubiginata* Hufn., and no larvae of *Chesias rufata* Fab. were to be seen anywhere, and the foodplant was nearly dead over a wide area.

*Amathes glareosa* Esp. and *Anchoscelis helvola* L. were in good numbers at Mildenhall, the only locality where I have taken either during 26 years' collecting, and even so, I doubt whether I would have taken these without the use of m.v.

I was unable to visit the Broads this year. A good number of *Eriogaster lanestris* L. larvae were found on Canvey Island, but many died. *Cucullia asteris* Schiff. and *Agrotis ripae* Hübn. larvae were found in numbers on an outing to Walton-on-the-Naze. I did not reach any really good collecting ground during the summer vacation this year: I ran the Robinson trap near Wetherby Yorks.; a fair number of moths turned up one night in the backyard. Many fine dark specimens of *Apamea monoglypha* Hufn. were seen, one *P. bractea*, several dark spectacle *Abrostola triplasia* L. (not seen since schooldays), and a pair of *Zenobia subtusa* Schiff. An expedition to the high ground of Wass Moor produced three *Plusia interrogationis* L., a good number of



northern spinach, *Lygris populata* L., and one Welsh wave *Venusia cambrica* Curt. Few *Hydraecia petasitis* Dbld. larvae or pupae were found under Wetherby Bridge, as much of the area is now spoiled by the dumping there of builders' rubble; six were found as against 26 a few years ago. There is a good locality, I should say, for this species at Barnard Castle, on the riverside in the centre of the town, where there is a large and concentrated patch of the foodplant, but who would be courageous enough to risk the publicity which digging in this spot would produce?

Finally, an effort was made to find *Epione parallellaria* Schiff. (*vespertina* Fab.) near York, without success, as the best locality seems now to be a mortar and grenade range—a local seen striding beyond a huge board announcing the dangers of “passing beyond this point”—exactly where I wanted to go, proved on questioning, quite unintelligible. Wisdom dictated retreat. I think he (the local) was looking for a goat. So ends the tale of my main activities in the 1959 season.

## A Cornish Note on the 1959 Season

By Dr. F. H. N. SMITH

Many apparently ideal mothing nights have turned out to be disappointing, but one or two things may be worth recording. A male *lubricipeda* L. with confluent black markings came to m.v.l. on 30th May. *Lithosia quadra* L. was the only species to appear in larger numbers than usual—35 in all, including seven females, between 8th July and 8th August. On the latter date I got *Nonagria sparganii* Esp. *Coenobia rufa* Haw. appeared 9th August, a species not previously seen here.

On 6th September, Colonel Rossel took me up the Fowey river to his lamping ground at Lerryn, a delightful wooded spot on the edge of the estuary. At 1 a.m. I netted *Rhodometra sacraria* L. as it flew to the light, and at dawn we found *Laphygma exigua* Hb. in the trap. We were flattered to be mixing with the aristocracy like this.

*Herse convolvuli* L. seems to be a regular visitor to Perranporth, and there were six this year, three of each sex. At dawn on 2nd October it was exciting to find three of these giants sitting together outside the trap, as well as a further *L. exigua* and a small party of about 100 *Plusia gamma* L. This was the largest number of *gamma* seen at one time this year. I had the opportunity for watching a *Convolvulus* Hawk feeding for several minutes at tobacco flowers. In the light from an open door, I noticed that it kept its proboscis extended as it hovered from bloom to bloom, not “stowing” it at all during the entire episode. I took one *Margaronia unionalis* Hübn. on 8th October, and a second *R. sacraria* on the 23rd at Perranporth.

There is little to say about butterflies. On the afternoon of 17th June, at a locality in north Devon, I saw three *Maculinea arion* L. flying in completely dull, but hot, weather. Two were already worn, which suggests that early June would not be too soon to look for *arion* in a hot summer. A very scanty immigration of *Colias croceus* Fourc. occurred between 5th and 15th September, since which date, none at

all have been seen. I was lucky to get a male *Lycaena phlaeas* L. with the hindwing orange band represented by streaks, on 5th October. I think this is var. *postradiata*.

The season has been enlivened by a start on the micros, but identification of many of them present problems, solved, as far as I can see, only by laborious and sometimes destructive work with Meyrick's revised handbook. Prof. Beirne's book on Pyralidae, and Mr. Bradley's illustrations of the Tortrices help a great deal, but I take it there are really no short cuts, and that dogged perseverance is the only way. Incidentally, by allowing one the chance of accurate identification, the recent superb Wayside and Woodland books on flies, beetles and now bugs, will add immeasurably to the interest of collecting expeditions. The cost of being a Jack of All Trades is, of course, being master of none!

I have been interested in the letters about *Apatura iris* L. as I have also noticed its interest in cars, and also in white shirts. On two or three successive days in July 1956 I watched some female *iris* feeding on exudate from a dead branch of small oak tree. Once there were two at the same time. My supreme *iris* moment, again in 1956, came when I had boxed a glowing but unfortunately damaged male. It was a broiling day, and I noticed the butterfly drinking what little moisture there was in the box. Lifting the lid cautiously, I presented a licked finger to the butterfly, which accepted the offering without demur. I then discovered that it was engrossed enough not to notice the removal of the box, and for about five minutes I had the delight of having a wild, free Purple Emperor sitting on my finger! In fact, I was the first to tire of the association, and decided to take a photograph. The butterfly allowed itself to be transferred to a moistened pillbox, which I put on the ground. I took the photograph, and then thought that the pillbox could be improved on as a background. I again transferred the butterfly, which was still slaking its thirst, this time to my light-coloured summer jacket, and took another photograph. In the end I put the butterfly on a hazel bush in the same manner, and went on my way.

## Summer and Autumn Butterflies in Cranleigh, 1959

By Major A. E. COLLIER

The first week of July, with temperatures in the eighties and nineties, brought out *Argynnis paphia* L., *Aphantopus hyperantus* L., and *Polygonia c-album* L. *Paphia*, as usual, were far from plentiful and during the whole season I saw, locally, not more than a dozen females, of which three were ab. *valezina*, a variety which appears every year in the local woods.

*C-album* were more plentiful than usual in July, mostly in the form *hutchinsoni*, and it is difficult to explain the almost complete absence of the second brood, usually far the more plentiful, in the months of September and October.

Normally in these months I have been able to record between 100 and 150 specimens on the scabious in three local fields, but this year, in several visits, the total number seen was five.

*Hyperantus* continued to flourish, apparently unaffected by climatic ups and downs, but this year having its life rather shortened by the intense and unbroken heat. In the past seven years this area has produced very few examples of the aberrations *caeca* and *arete*, but this year was exceptional and in my three most populous colonies these varieties occurred fairly frequently, whereas *lanceolata* was only seen once, and then in a completely new area. *Lysandra coridon* Poda and *Maniola tithonus* L. appeared on the 4th and 7th of July respectively, and *tithonus* later became more plentiful than I have known it in Surrey, but with very little noticeable variation.

*Coridon* suffered greatly from a herd of bullocks which, throughout the summer, trampled its favourite breeding ground to dust and ate all the flowering plants including much of the *Hippocrepis comosa* and probably many larvae. In spite of this there were fair numbers to be seen in ungrazed flowery spots, and a certain amount of minor variation, more than I saw elsewhere in Sussex and Dorset.

The middle of the month saw the second brood of *Polyommatus icarus* L. well out, followed by *Thymelicus sylvestris* Poda, *Gonepteryx rhamni* L. and *Mesoacidalia charlotta* Haw. *Sylvestris* became exceedingly numerous and towards the end of July in the woodland areas, with *hyperantus* and *Maniola jurtina* L. almost over, it was the only butterfly to examine. A fairly thorough search, however, revealed no sign of *Thymelicus lineola* Ochs. among the swarms of *T. sylvestris* Poda. In Northamptonshire, in any sizeable colony, I usually found the two species flying together. During the past seven years *M. charlotta* has not appeared to my knowledge in any of its local haunts, where it was once quite numerous. I can only hope that the lonely female which I saw will prove to be the forerunner of many more.

*A. cydippe* L. failed to show at all this year, and it may now have completely disappeared from this neighbourhood, where for many years it has only occurred in ones and twos. *Lysandra bellargus* L. made a remarkably early appearance on 22nd July and from then till the end of August could be found in fair numbers sharing the few available flowers with multitudes of *icarus* and *pamphilus* and a good sprinkling of *coridon*.

*Pararge megera* L. and *Eumenis semele* L. were both flying but in substantially smaller numbers than usual.

I can never understand the comparative scarcity of *megera* in this part of Surrey, where in so many places conditions appear to be very suitable for its survival and increase.

From early August *Lycaena phlaeas* L., which has been almost a rarity since 1950, began to increase very noticeably in numbers, and from then until the end of September my time was spent in searching for likely patches of fleabane or ragwort, where almost invariably there were good concentrations of *phlaeas*, with considerable minor variation and many examples of *obsoleta* and *radiata* types. In addition to caging promising females for egg laying, I found it rewarding to search the small and stunted sheep sorrel found here and there amongst the heather on the Surrey commons. It was an easy matter in this way to accumulate a good number of eggs laid probably by quite a wide selection of females.

This very welcome preoccupation with *phlaeas* involved the comparative neglect of *Apatura iris* L. for which I only started searching seriously in October.

The larvae were far from plentiful and although they were found in fourteen widely separated localities there were rarely more than two in one place.

In a favourite spot, where I had earlier earmarked four larvae to show to a friend from the Midlands, obvious signs indicated intensive search and the four larvae had been removed. Fortunately many of the *iris* localities in this part of Surrey are not easily detected by a casual visitor and the most obvious, and till recently the most densely populated, has now been destroyed in favour of pigs and possibly poultry. The *Vanessidae* completely failed round here and the *michaelmas* daisies and sedum in my own and other gardens carried nothing but a very occasional *Aglais urticae* L. and a few *Vanessa atalanta* L. with no sign of *Nymphalis io* L. or of *c-album*. In such a wonderful summer their absence may be due to the ever growing practice of spraying crops and roadsides and certainly it is very difficult nowadays to find a sizeable bed of nettles.

With the exception of *Thecla betulae* L. the hairstreaks are not strongly represented in this neighbourhood. I know only of one place where *Strymon w-album* Knoch may be seen regularly, but in very small numbers, and *Callophrys rubi* L. is never very numerous.

Up till 1954 *Thecla quercus* L. was quite common in most oak woods and the larvae, in substantial numbers, could easily be obtained by beating in May; incidentally this is the only larva for which I allow myself to beat.

For five years I have rarely seen *quercus* at all, and I suspect that birds and parasites are responsible for their scarcity; the latter were certainly very prevalent in 1954, and in earlier years I have seen the imagines being ruthlessly disposed of by families of flycatchers. I have seen more *betulae* on the wing this year than ever before, and to round off a wonderful summer in which the occasional shortage of butterflies hardly seemed to matter, a recent inspection of my small blackthorn hedge revealed thirteen *betulae* eggs, the hoped for, and at last attained, result of seven years release of bred specimens.

## The Macrolepidoptera of Inverness-shire : Newtonmore District

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

(See *Ent Rec.*, **66**: 58, 90, 124; **67**: 39; **68**: 91; **69**: 52; and **71**: 115.

### SUPPLEMENT No. 5

Yet again it is a pleasure to record new species for my Badenoch list, the district being defined in my main list in *Ent. Rec.*, **66**.

This year, 1959, three new species have been added. Again all are moderately common Southern species; two of them have almost certainly been overlooked in the past; whilst the third has probably arrived recently from the West consequent on the increase of the Bracken Fern in this area.

## ARCTIIDAE

## LITHOSIINAE

*Comacla senex* Hb. Four fresh specimens of this inconspicuous little Footman were taken at m.v. light by Mr. F. A. Noble on 7th July 1959 near Boat of Garten. The locality is an ordinary, boggy piece of moorland, rich in grasses, juncus, and some heather, and it is noteworthy that no reeds or fenny vegetation is present. On the other hand, it may be significant that the only bed of *Typha latifolia* in the district is growing only a few hundred yards away, and this is a plant with which I have invariably found *C. senex* to be associated in England. I believe this record to be the furthest North station known for this species in Great Britain.

## AGROTIDAE

## CUCULLIINAE

*Tiliacea citrigo* L. I have discovered this fine species to be well established in at least two localities, near Kingussie and in Glen Feshie; after no less than eight years residence in the district this was a humbling as well as pleasant surprise. Small numbers of Lime trees were planted in the nineteenth century in several estates, and the moth is probably widely distributed.

## HEPIALIDAE

*Hepialus sylvina* L. A male specimen of this Bracken feeding species was taken at portable m.v. light near Newtonmore, in my presence, by Mr. P. Le Masurier on 29th July 1959. This species is most probably a recent arrival from the west, where it is well established.

My attention has been drawn, by Mr. P. Le Masurier, to an obvious drafting error in my original main List. *Ent. Rec.*, 66, under the entry for *Psodos coracina* Esp., in the last line, the word "odd" should replace the word "even".

This supplement increases the total number of Badenoch Macrolepidoptera at the present date, December 1959, to 360 species.

9/xii/1959. Nedaich, Newtonmore, Inverness-shire.

## A Further Note on Hepialidae (Lep.)

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

It is a very great pleasure to be able, so soon, to publish a field observation which amplifies and corrects a note I wrote in the April issue of the *Record* (*Ent. Rec.*, 71: 91).

On page 91 I remarked that I had no reason to doubt the widely held tradition that the female *Hepialus humuli* is the aggressor in mating, selecting her mate from the cloud of pendulating males, although I did in fact continue to doubt it! At last the actual encounter has been clearly observed, and without any doubt whatever. The mating act was seen by my son, M. W. Harper, who told me the same evening and has asked me to record it for him, which I gladly do.

On 29th June we were holidaying in the Isle of Canna, Inner Hebrides, and that evening he was "dusking" on the smaller Island of Sanday which adjoins Canna on the Southern side. Noticing a few

male *H. humuli* pendulating over some long grass and rushes he paused to watch them. Females were flying close by, but it soon became clear to him that they were evincing no interest whatever in the pendulating males, and in fact they appeared to be ovipositing by the scattering technique which they certainly employ. As he stopped to watch three individual males which were pendulating within a few feet of each other, he suddenly noticed a fresh female hanging by its legs from the top of a curved over tall grass stem, its abdomen hanging absolutely vertically in a typically "calling" attitude. The female was about six feet from the nearest male, all three of which he now saw to be very slowly swinging closer and closer to her, and at a height of about one foot above her level. After two or three minutes of this slow approach, the swing of the nearest male brought him almost vertically over the female, and at the exact instant he closed his wings, plummeting down on top of the female. In less than five seconds he had engaged his claspers with the abdomen of the female, released his hold with his legs, and was hanging vertically beneath her suspended only from her abdomen. The encounter was completed. Whether the sense of smell or of sight was used by the male cannot be certain. I incline to the former.

8/xii/1959. Nedaich, Newtonmore, Inverness-shire.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

*Margaronia unionalis* Hübn. With reference to Mr. Allen's interesting note of this species in the London area (*Ent. Record*, 71: 266). I remember that my old friend, the late B. A. Bower, had a perfect female specimen of this moth in his collection, which he took sitting on a building in Leadenhall Street (so far as my memory serves me). I do not think he ever recorded it as he thought people would say it was accidentally imported, though, as he said, an immigrant might just as well drop in the City of London as elsewhere. The moth was taken about seventy years ago.

*Stenoptilia pneumonanthus* Buettner. In the *Record* for May 1956 (68: 129-132), my old friend O. M. H. published an interesting article on *S. pneumonanthus* Buettner and *S. graphodactyla* Treits. In the course of this, he stated that the only records beside that of the late Gervase Matthew was one by S. C. S. Brown (*Ent. Record*, 50: 149).

I fear that many of us have not taken the trouble to record insects when we have had nothing new to say about them except that they had been found in a new place of a similar character to one already known.

*Pneumonanthus* was, and I expect still is, in spite of tanks and battle training, found on many boggy heaths in Hampshire and east Dorset, in fact, I should not despair of finding it anywhere in those counties where the food plant existed. The great curse of all these heaths is fires, but as the gentian usually grows on swampy ground, it does not suffer as much as some other plants.

Matthew's original locality was Ferndown, but in 1920 he wrote to me saying that the place where he found it was now enclosed and mostly

built over, but that the species would be found elsewhere without doubt. I found it from 1925 to 1935 in several localities, and in the one at Beaulieu Road mentioned by Mr. Jacobs; I also found *Trichoptilus paludum* Zell., then considered a lost species, in several places near Ringwood and on Parley Heath, where it used to be abundant. I visited this locality on 14th August 1932 in company with the late Sir John Fryer, Capt. and Mrs. Diver, and their son Paul. There was a rather nasty swamp on the heath, full of virulent gnats, and the gentian was so strong and common there that it could be seen a hundred yards away; the plants were twice as tall as those at Beaulieu Road, and had several flowers on each stem. Directly we began to move amongst them, the later specimens of the first brood, in very bad condition, began to be disturbed in small numbers. They were, of course, quite useless as cabinet specimens, but we soon found an odd larva or so in the flower-heads, and we each took a few. I think I brought home about two dozen stems, which I tied in a muslin sleeve and put in water, and when I had obtained between 30 and 40 pupae, I sent the stems to one or two friends, who bred several more. On the way back, we took two or three worn specimens of *Coscinia cribraria* L., which rose from the heather.

*Pneumonanthes* is double brooded; the first brood feeds in the shoots, which are difficult to find; the second in the buds and blossoms. Many plumes have this habit; *Platyptilia isodactyla* Zell. feeds as a first brood larva on the underside of the leaves in the rosette of *Senecio aquaticus*, and as a second brood in the stem, whilst *Leioptilus carphodactylus* Hübn. feeds in the central rosette, where the stem should rise, of *Inula conyza*, and as a second brood in the flowers.

## Occurrence of *Evergestis extimalis* Scop. in Kent

By S. WAKELY

On 9th August 1959 I captured a specimen of this very local moth at Higham, Kent, on the occasion of a field meeting with the South London Entomological Society to the district. Mr. J. M. Chalmers-Hunt was with me, and a few minutes later he netted another. It was a species new to us and we started searching for a likely foodplant. I remembered that the larvae feed on mustard and charlock, and close to the spot where I took mine was a large cruciferous plant with yellow flowers which was certainly not charlock, although I thought it might be one of the species of wild mustard. We were on very rough, chalky ground by an old disused canal, and a high steep bank of chalk extended for some yards, obviously the result of the excavations made when the canal was originally made. Climbing to the top of this bank to examine another of the plants mentioned, we discovered masses of the same yellow-flowered plant. It had tough cabbage-looking stumps and was two to three feet in height. By walking among this we disturbed many more *extimalis*, well over a score being taken. Our efforts and conversation were soon noticed by the resident of a house near a large factory of cement products, and we were told that we were trespassing, and although interested in what we were taking, this person insisted that we must not stay there. However, we both had a nice series, as

several others of the South London party had helped us, although not collecting the species themselves.

On reaching home, I endeavoured to determine the name of the plant among which the moths were flying, and which was obviously their foodplant. The description of the Wall Rocket (*Diplotaxis tenuifolia* (L.) DC.) seemed to fit, but as this is not mentioned as a foodplant by any of the authorities I sent some to Dr. E. Scott and Mr. T. R. Eagles, both of whom confirmed that it was the Wall Rocket.

On 5th September, Mr. Chalmers-Hunt, accompanied by Mr. L. T. Ford, made a trip to Higham to look for larvae, which were found to be quite common spun up in webs among the seedpods of the Wall Rocket. The seedpods are about three-quarters of an inch long and the larvae devour the pods as well as the seeds. The spinnings are compact and completely sealed when the larva is resting, as many as three larvae being sometimes found in one spinning. In spite of this, the webs were smaller than one would have expected from the size of the larva inside, but easily seen when one knew what to look for. About a score of larvae were generously handed over to me. They were mostly full-fed and were transferred to a 10" flower pot, in which a piece of turf was growing. The larvae spun up among the roots of this, and it is hoped the moths will appear next June. The larvae were pale yellow in colour, with blue and red markings and numerous black dots—rather a showy larva, in fact.

Mr. G. H. Youden has taken several specimens of this moth in his light trap at Dover in recent years (13 noted in 1956); otherwise there are very few captures recorded for the South of England. To see if more could be found out about its distribution in Britain, I went through the indices of many volumes of the *Record* and the *Entomologist*. Year after year was gone through, with no mention at all of the species. However, I did find a few references to it, namely:—

In 1952 Mr. A. M. Morley reported two at Folkestone at his m.v. light. Mr. H. C. Huggins reported in the *Record* that larvae are sometimes plentiful in the Breck, feeding on seeds of mustard and charlock, but that the moth is scarce. In 1935 he found it common near Tuddenham, but on revisiting the locality some years later (in 1949) found the area had been ploughed up.

On 11th June 1954—an unusually early date—a single specimen was taken at Torquay, the first record for S. Devon. Another one was recorded at Aldershot in 1957.

Although there must be other records than these, it will be gathered that the species is quite a rarity—except, possibly, in the Breck.

Meyrick gives localities as follows: "Kent to Gloucester and Norfolk, Devon, local". Beirne mentions "Cambridge, Huntingdonshire, Berkshire, Hertfordshire, Lancashire, Oxford, Kent, Isle of Wight, and North Devon".

The only foodplants given by these authors are Charlock (*Sinapis arvensis* L.) and White Mustard (*S. alba* L.), and it is interesting that the colony we found were feeding on a different plant, although the Wall Rocket is closely related botanically to the two mentioned. Wall Rocket is very common on bomb sites in London, and I have seen it growing freely at Finsbury and by the Elephant and Castle. It is also an exceedingly common plant on railway banks on almost every line going



to Kent from London Bridge, particularly beyond Dartford. There is plenty of scope for *extimalis* to spread to other areas, and it will be interesting to see if this happens.

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## Notes and Observations

BRITISH ENTOMOLOGISTS AND THE BRITISH FAUNA.—I must confess I find it difficult to discover what Mr. Carlsfeld-Krausé is driving at in his note (*antea*, p. 269). The population of *Abraxas grossulariata* L., which feeds on *Calluna* in some places and *Erica* in others, has already been studied by Dr. Heslop-Harrison, whose various notes on the subject I shall not attempt to summarise.

As I have noted also, this species in some parts of the Burren of Clare feeds exclusively on hazel, although the hedge may be a composite one with more blackthorn than hazel, whilst in Essex it does not appear to eat hazel at all. I have reared these hazel-feeding insects, mated them, and found that their offspring would eat blackthorn, gooseberry, or Japanese euonymus. These Burren moths are just like ours and behave like ours, so what is there to say except that they prefer hazel in the wild. I have suggested that the reason for this preference is that the blackthorns are usually skeletonized by a species of *Yponomeuta* by the time the *grossulariata* eggs hatch, but this is pure conjecture.

The mere fact that a species eats a different plant in some parts of this country to others, and again different from what it eats on the continent, does not necessarily make it particularly worthy of study. The discoveries of Thomas Algernon Chapman and others concerning species inhabiting continental Europe suggest that there were a few rifts in the "smog" which enveloped our fathers.

I am glad, however, that, like the famous Monsieur Hanaud, Carlsfeld-Krausé possesses such a remarkable knowledge of our idioms, but perhaps he will tell me to what species the spotted seal belongs? Is it the common seal, grey or Atlantic, ringed, harp, or possibly the antarctic sea leopard? In any case, although I have seen *grossulariata* larvae on heather and hazel, and *Sphinx ligustri* L. feeding on the top branches of holly trees, I shall, when I see a spotted seal in a strawberry bed, take the nearest taxi to a psychiatrist's consulting room.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 8/xii/1959.

TELPHUSA TRIPARELLA ZELLER ON SWEET GALE.—With reference to the notes on this species which have appeared in Vol. 71 by Mr. Wakely (p. 154) and Mr. A. A. Allen (p. 265), I would refer to my note on Lancashire and Cheshire Lepidoptera which appeared in the *Record*, Vol. 64, p. 179. These indicate that *Myrica* is a food-plant of *T. triparella*. In northern England, I have bred the moth from larvae

found in August in spun upper shoots of *Myrica* from Delamere (Cheshire) and Witherslack (Westmorland). The late B. B. Snell took larvae from the same plant at Borth, Cardiganshire. In the Mansbridge collection, there is a series from Aviemore labelled "Bred, *Myrica*," and I found the moth there in late May 1959. The larva is also plentiful on moors to the north of Loch Ness where oak is not present. The moth, difficult to disturb during the day, flies among *Myrica* at sunset in late May and early June. The larval habitation is a tightly spun tip of a shoot containing much frass and the larva feeds within skeletonising the leaves leaving the outer lower cuticle intact. In September it appears to pupate between the leaves though a few spun in the folds of the bag. A high rate of parasitism is to be expected. The habitation of *Argyroplote dimidiana* Sodof., is quite distinct making a swollen balloon-like structure of the top shoot.—H. N. MICHAELIS, 10 Didsbury Park, Manchester 20.

**TILIACEA AURAGO SCHIFF. IN DERBYSHIRE.**—This moth is very uncommon in Derbyshire, which is not surprising since beech woods are not met with there. One specimen was reported at Chesterfield in 1905, one at Monk Wood in 1952, and another at Beeley in 1957. On 1st October 1958 I took one *Tiliacea aurago* Schiff. in my mercury vapour light trap at Hepthorne Lane, near Chesterfield, and, on 19th September 1959, I took another perfect specimen in a light trap at Stockmoor Farm, Wingerworth, which is not far from Hardwick Wood where a few beech trees may be found planted among the larches. There is a long row of ancient beeches in Tupton Park, which is in sight of the trap. They may explain the appearance of this species here.—J. H. JOHNSON. 22/xi/59.

**DASYPOLIA TEMPLI THUN. IN DERBYSHIRE, 1959.**—On the morning of 4th October 1959 I found a perfect specimen of *Dasypolia templi* Thun. in my mercury vapour light trap which had been running all night in the garden of Stockmoor Farm, Wingerworth, near Chesterfield. This is the first time I have ever taken this species and only one was recorded in the Derbyshire list of Mr. Hayward, 1926. I saw two specimens which were said to have been taken in a trap in Chesterfield in 1957, and although I asked the collector who showed them to me to record them in one of the entomological journals, I have not yet seen them mentioned in print. Since this species feeds on Cow Parsnip, which is very common in this district, it is surprising that it is not met with oftener. According to South it frequents rocky coastal areas, and the nearest of these is more than a hundred miles away. Perhaps this explains its rarity.—J. H. JOHNSON. 22/xi/59.

**EPITRIPTUS COWINII HOBBY (DIPT., ASILIDAE)**—A Correction.—When discussing the distribution and habits of *Epitriptus cingulatus* F. in this journal, volume 71: 14-16, a statement was made that *arthriticus* Zeller was the only other species of the genus in Britain. One of our readers, Mr. D. E. Allen, has kindly pointed out that I had overlooked Dr. B. M. Hobby's description of a new species, *cowinii*, from the Isle of Man in 1946, *Ent. mon. Mag.*, 82: 88-91, and included in an amendment to his key to the British species of Asilidae.

It was collected in 1940-1944 at Braddon and about Ballaterson between 23rd June and 8th August from grassy hedgebanks where it sat on bramble leaves, grassy stems, etc., making capture darts at other insects, including the common wasp *Vespula vulgaris* L. Its captures were a dung fly *Scatophaga stercoraria* L. and a pug moth recorded by Mr. W. S. Cowin *op. cit.* 91 as *Eupithecia alliardia* Staud. and as new to the British List. Baron de Worms has shown, 1958, in *Ent. mon. Mag.*, 94: 67, that the moth is only a specimen of the Marsh Pug *E. palustraria* Doubleday. Further details of the Asilid, which does not appear to have been seen since 1944 can be found in *Ent. mon. Mag.*, 28: 88-91 as quoted above and in Mr. W. S. Cowin's article in *The Peregrine*, 1947, vol. 1, Pt. 4: 9-10.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

TWO UNCOMMON SPECIES OF OPOMYZIDAE (DIPT.).—Mr. J. E. Collin recorded his capture of a female *Geomyza breviseta* Cz. in Suffolk in June in *Ent. Record*, 57: 15. Mr. H. L. F. Audcent included the species in his "Bristol Insect Fauna Diptera," 1950, *Proc. Bristol Nat. Soc.*, 28: 80, with a record of his taking a specimen on a species of Brome grass, *Bromus* sp. at Clevedon, Somerset, on 19th July 1942. In a collection of diptera made by my friend Mr. A. le Gros in Hampshire I have found another female of this species, collected on 20th September 1948, at Crab Wood, Sparsholt, near Winchester.

*Opomyza punctata* Hal. was originally described from a specimen from Holywood, Co. Down. Mr. J. E. Collin, *op. cit.*, p. 14, stated he could record it also from Essex and Suffolk. I can add another of our coastal counties, Kent, to this list as I captured a male when I was collecting along the sea wall of the Thames estuary at Stone on 7th September 1947. It is closely related to *O. florum* F. which is known from time to time as a serious pest of cereals, especially winter wheat. The abundant and widely distributed *O. germinationis* L. has been bred from *Festuca pratensis* Huds., *F. rubra* L., *Lolium perenne* L., *Poa annua* L., *P. pratensis* L., *P. trivialis* L., *Agrostis tenuis* Sibth., *A. stolonifera* L., *Phleum pratense* L., *Alopecurus pratensis* L., and *Holcus lanatus* L., I. W. B. Nye, 1958, *Trans. R. ent. Soc.*, 110: 435. It is possibly to be found in the larval stage in one or more species of the grasses of our coast. Dr. W. Hackman figures the male genitalia in *Notulae Entomologicae*, 38: 120, and records it from Finland, Sweden, U.S.S.R. (Leningrad area), and from central and western Europe.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

THE "BIRMINGHAM SALE".—The first sale of the season was held at King Street, on 29th October, when the collections of three Birmingham entomologists, comprising 433 lots, were under the hammer. Attendance was rather less than usual, but every lot was sold.

The varieties of *Arctia caja* L. included 3 ab. *diaphana* which realised £23, £21, and £16, and three ab. *splendens* £15 10/-, £2 15/-, and £1. In several cases a drawer full of minor varieties went for 5/- each. A striking variety with blue-black hindwings and almost clear brown forewings made £3 10/-. All these had been bred from larvae taken near a Birmingham power station. Three *petroburgensis*, in perfect condition, fetched only 6/-.

A variety of *Melanargia galatea* L., with dark suffused forewings, fetched £7 10/-. The highest prices for *Aglaia urticae* L. var. *nigrocarina* were £5 15/-, £4, and £3 3/-, bred from the same locality as the *caja*.

*Colias croceus* Fourc. varieties included a gynandromorph *helice* which made £5 15/-, and *helice* ab. *excessa* £3, while a violet tinted specimen with white discoidal spots fetched £2 7/6.

An *Argynnis cydippe* L. melanic female fetched £8 5/-. It was taken by the late G. P. Sutton who saw it in Wyre Forest one day, but it evaded him: however, his wife encouraged him to traverse the 22 miles again the next day, when it obligingly appeared at the same spot and was netted. A variety *aterdiscus*, taken by Mr. L. Birch at Wyre, made £15 10/-, and his variety of *Vanessa io* L., with eyespots on all four wings almost obliterated by black scales, fetched £2 15/-.

Two *Aphantopus hyperantus* var. *lanceolata* made £2 and £1 10/-. Hybrids were evidently quite out of fashion, fetching only a few shillings for several.

The tropicals were headed by *Morpho rhetenor* at £1 3/-, and *M. cypris* £1 4/-. A drawerful including *antimachus* made £1 14/-, while a pair of *brookiana* fetched only £1 16/-.

Of the nine cabinets, a 32-drawer Brady went for £49, and a 30-drawer for £31. Small cabinets fetched £5 5/- and £3, and a 30-drawer Victorian mahogany one for £25.

A surprise was the appearance of newspaper reporters armed with cameras, and notes on the sale (and with a photograph) appeared in four newspapers.

URESIPHITA GILVATA FAB. IN THE ISLE OF WIGHT.—My friend Mr. H. C. Huggins reminds me (*Ent. Rec.*, 71: 262) that I have to record the capture of a specimen of this rare migrant near Yarmouth, Isle of Wight, on the night of the 6th-7th October last. I showed it to Mr. A. J. Wightman, who later told me that a very worn specimen came to his light at Freshwater on the following night, but that it dived into the grass and so evaded capture.—EDGAR J. HARE, Harrow Place, Pin-den, Dartford. 1/xii/1959.

COSYMBIA PUPPILLARIA HÜBN. IN WIMBLEDON.—A male example of this species, in fresh condition, was attracted to a m.v. light during the night of the 16th October 1959. I am indebted to Baron de Worms for verifying its identity.—J. V. DACIE, 10 Alan Road, Wimbledon, London, S.W. 19.

## Current Literature

LIVING INSECTS OF THE WORLD. By Alexander B. and Elsie B. Klots  
Doubleday & Co., Inc. New York. £3 3s.

These authors have again produced a beautiful picture book which is not the whited sepulchre in which readers have been treated as illiterates seeking solely to be amused as is the case with so many "popular" natural history books. Both authors are highly qualified entomologists with long teaching experience, and they have mastered

the art of covering a very wide subject in a series of short and well organized articles. No words are wasted, and readers should begin with the preface and introduction, and not skip these important parts of the book as is so often done. The first chapter concisely gives the background to the insect world, and then follow twelve chapters on insect orders, starting with the most primitive and working up to the most highly specialised orders. Each order is described, and the chapters are sub-divided so as to treat of the major divisions of that order sufficiently to enable the reader to place an insect in its correct sub-order or family. Both scientific and popular names are used so as to extend the usefulness of the book to as wide a section of nature lovers as possible, but the authors have the knack of "popularising", if one may use the word, scientific names in much the same manner as did Henri Fabre.

Great stress is placed on the relation of insects to the lives of man, beast, bird and other insects as well as on plants, and wholesale slaughter by insecticides is wisely deplored; the slaughter of predators at the same time is stressed as a very good reason for using insecticides only where the spraying can be confined to the particular pest under consideration.

The final chapter deals with the structure and growth of insects and is followed by a bibliography of works cited, an index of insects mentioned, and a subject index.

The illustrations consist of drawings, half-tone photographs, and full-colour photographs of the striking nature one has come to associate with these authors, the source of each photograph being acknowledged at the beginning of the book. Certain iridescent colours such as a Chrysomelid beetle or the eyes of a Tabanid fly leave nothing to be desired, and the colour work throughout is of the highest order.

In the preface, the authors acknowledge that there may be some mistakes, for which they crave indulgence, but the writer of this note has so far failed to notice any inaccuracies. It is a book of the kind which particularly recommends itself to amateurs who specialize in a very small part of the insect world, but who like at times to get an idea of that group's relations, both near and distant, without having to delve too deeply into the literature of the subject.

I congratulate the authors, and look forward to the more specialized book which I believe they have now on hand.

S. N. A. J.

PROCEEDINGS AND TRANSACTIONS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. 1958. 20s. xlv + 158 pp., with nine plates, two of which are in colour.

This volume gives the customary account of the Society's doings, and includes some useful papers. The description of larvae not figured by Buckler is continued, with two coloured plates illustrating larvae of *Coenobia rufa* Haw., *Nonagria algae* Esp., *N. neurica* Hübn., *Hydrillula palustris* Hübn., *Caradrina ambigua* Schiff., and *Acosmetia caliginosa* Hübn.; Mr. F. V. L. Jarvis has contributed a paper on experimental variations in *Aricia agestis* Schiff., with two half-tone plates, and Mr. F. D. Buck completes his presidential address with an

account of the British Anobiidae, and he has also written a most instructive article on a code of rules for contributors, which might well be studied by all who write for publication; this is under the title of "The Style of the House". There are also accounts of field meetings, with photographs of four groups, and a detailed account of exhibits at the annual exhibition, with two plates illustrating twenty striking varieties of lepidoptera. An obituary notice, with plate, of the late Canon Edwards is included, as is the current list of members ordered both alphabetically and according to residential areas.

S. N. A. J.

The volume on BRITISH BLOOD-SUCKING FLIES by Edwards, Oldroyd and Smart was published by the British Museum in 1939, and looking through the book ten years ago one felt that at least this part of our insect fauna was well known. Since 1950, however, we have had added to the British list one species of mosquito, *Culex torrentium* (1951, *Nature*, 28th July, p. 172), a species of *Simulium*, *S. inflatum* (1957, *Proc. R. ent. Soc. Lond. B*, 26: 1) and five species of *Culicoides*, *C. achrayi*, *C. duddingstoni*, *C. lupicaris*, *C. pseudochiopterus* and *C. scoticus* (1952, *Proc. R. ent. Soc. Lond. B*, 21: 61; 1955, *ibid*, 24: 37). Now, in the *Entomologiske Meddelelser*, 29, 1959, pp. 78-150, Leif Lyneborg has revised the Danish species of *Hybomitra*, and this indicates a revision of the nomenclature of the British Tabanids, and also the possible presence of undiscovered species in this country.

Concerning the nomenclature, the author recommends the suppression of the name *T. tropicus* L., the type of which is apparently a form of *T. montanus*, and what has been included under the name of *T. tropicus* should now be referred to as *T. collini*, described as a new species by the author, and *T. mühlfeldi* Brau., depending on the colour of the notopleural calli and the shape of the eighth sternite in the female (see also Collin, J. E., 1940, *Ent. mon. Mag.*, 76: 178, on the female genitalia of *T. tropicus*, *T. solstitialis* and *T. distinguendus*). The author gives a table to separate *T. collini* from *T. bisignatus* and *T. bimaculatus* Macq., which is also recorded here from Britain.

In addition to *T. collini*, four other new species are described. *T. schineri* Lyneborg is recorded from Britain in this paper, separated in the key from *T. distinguendus* by the brown colour of the first two joints of the antennae, many black hairs on the side markings of the second tergite, and with female genitalia like *T. solstitialis* and *T. collini*. The other three new species are related to *T. montanus* and are *T. lundbecki*, *T. tuxeni* and *T. staegeri*. There is the suggestion that *T. lundbecki*, which is a common species in Denmark, or *T. tuxeni*, might occur in Britain.

Obviously a revision of the British species is now required, and most collections may need to be re-arranged with the help of this paper, which contains keys to both males and females, and descriptions of each species.

The paper is written in English.

B. R. L.

# Potatoes à la Portugaise

Not far from Lisbon lies a rich agricultural area. Here, around the pretty white villages, early potatoes are under cultivation. There was great concern when the crop began to decline. The authorities were called in and, in a survey, discovered that nearly a third of the area was under attack by the potato root nematode (*Heterodera rostochiensis*).

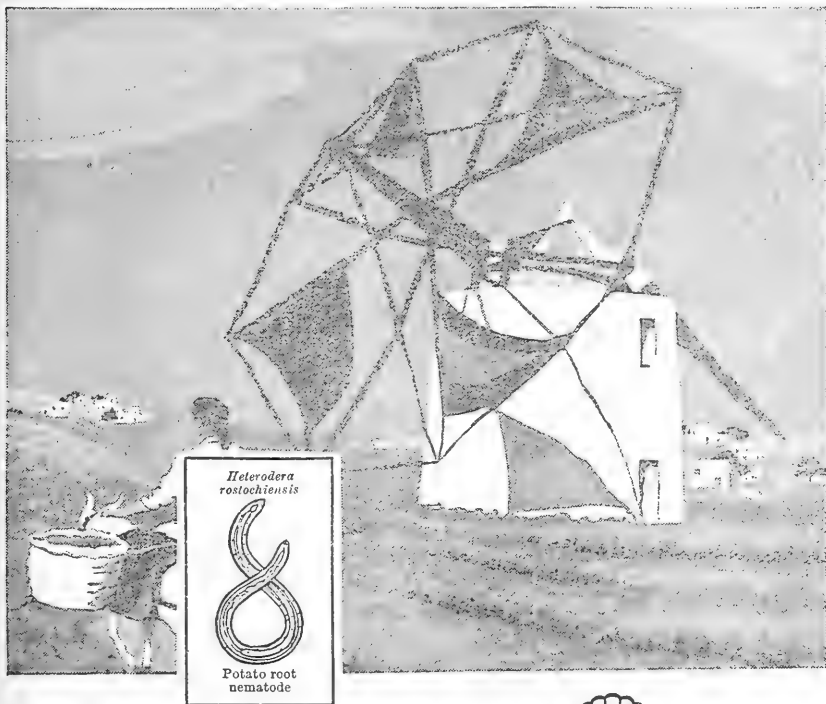
Immediately, trials were undertaken with the Shell soil fumigant, D-D, which was injected into the soil four weeks before planting. A wise move indeed for, on lifting the potatoes in the following summer, it was found that the yield had increased from an original 6,000 kgs. to 22,000 kgs. per hectare—an increase of over six tons per acre!

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that they began to apply the D-D treatment themselves. Today, many of them regularly fumigate with D-D, especially where potatoes are grown year after year in the same soil. With D-D, there are 'second helpings' . . . of potatoes à la portugaise.

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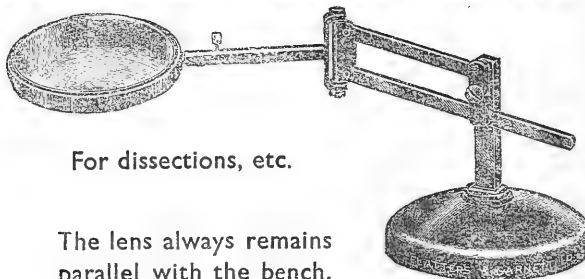
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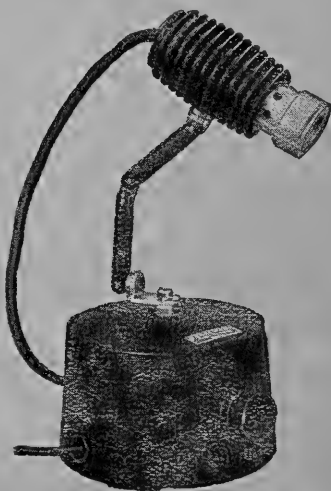
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# Some Notes on the Egg-laying and certain other Habits of *Apatura iris* Linnaeus

By I. R. P. HESLOP

These notes are intended neither to be comprehensive nor to include features which have been satisfactorily resolved. For example, the true significance of Frohawk's observation, as to assumed preference of the right side of the mid-rib of the leaf for laying, was effectively explained by Stanley Morris in the course of his essay on the species (1938 *Entomologist*, Vol. 71, page 51); and therefore is here not considered further. Incidentally, it is generally agreed by observers that the female prefers the forenoon for laying: a conclusion which is indeed given numerical support by Morris's remarks.

One thing which still remains an object of controversy is the height of bush, and also the height on the bush, habitually chosen for laying. There appears to be no doubt that habit may vary from year to year, in accordance with existing or even anticipated weather; but I, personally, am convinced that laying is as a rule at a moderate elevation, say from five to ten feet above the ground. I do not think, however, that there is any preference for bushes or trees which themselves are within the limit of the latter dimension.

Regarding height of ovipositing, there is here I think some confusion of thought between this feature and the height at which larvae are found. The larva of the Purple Emperor is a great traveller, especially after hibernation. According to the weather, and also to other possible considerations of which more knowledge is desirable, it may wander—apart from peregrinations to contiguous bushes—down to levels a few inches only from the ground; or, where the size of tree allows, up to heights of twenty or twenty-five feet or more. Mr. A. J. Wightman has told me how he once, in Sussex, saw an *iris* caterpillar crawling at remarkable speed up the bole of an enormous Broad-leaved Sallow (which he later showed to me) from a position inaccessible to him, though only a few feet from the root, until it was lost to view among the upper sprays some thirty-five feet from the ground.

The potential speed of movement of a large larva is indeed a revelation. I, myself, had no notion of it until a colleague at my request took a flash-bulb photograph of a larva on a growing bush in one of my large cages!

But regarding high locations of *iris* larvae, here I may venture to interpolate the following story. In late May of one year, on one of the rare occasions when I have sought company—other than that of my own family—for my investigations, I was pulling down hand-over-hand the main stem of a tall sallow, the upper foliage of which had issued an indefinable appeal to my eye. Just as I was reaching the crown, and was preparing to bestride the stem while examining the leaves, my companion—who had been otherwise engaged—darted forward with the gladsome cry of "there's one"; and, at a moment when all the strength of both my arms was being required to hold down the stem, abstracted from before my eyes a Purple Emperor caterpillar which he, without a word, then or later, proceeded coolly to box.

On another occasion I spotted in a Wiltshire wood the silhouette, through the leaf, of a full-grown larva some twenty feet from the ground.

As I was hauling down the fairly slender willow stem, in the manner above described, my hands slipped; and I saw that caterpillar go catapulting up into the air and down into the thickets. I tried hard to find it, but this was really a hopeless task. I can only hope that it found a willow stem to crawl up. Supporters of the beating method always maintain that even if—as must obviously often be the case—the larva misses the tray, it will not be wasted since “it will crawl up the bush again”. Quite apart from questions of the increased exposure to natural enemies, I cannot support this plea. It is by no means certain that a larva, already shocked, will have any such natural inclination. In fact there is some evidence to the contrary. In a Sussex wood some years ago, when coppice growth was being partially cut, numerous larvae of *A. iris* were observed crawling from the brushwood and resorting to and climbing up, not the stems of Willow of which there were still some standing, but the stems of birch and in a few cases the trunks of quite well-grown beech.

There is also disagreement as to whether the sparse and straggling bush or the compact well-furnished bush is most favoured. Here again, I think there is some confusion of issues. I believe there is no doubt that the majority of eggs are laid on sparse, straggling—often struggling—bushes: but this solely because such bushes give easier access to the laying female. Before hibernation, these are undoubtedly the most rewarding ones to search for larvae.

But after hibernation, it is a very different story. Thick, compact bushes, even when they are not in leaf, afford much more protection against the attacks of birds: and when they are in leaf, and the larva is out of hibernation, they afford much more protection against late frosts. In consequence a much greater proportion of stock which is laid on such bushes survives.

From my own observation, I estimate that, in the wild, three-quarters of all eggs are laid on the sparse and straggling type of bush: of these probably not more than one fifteenth survive to the last instar. Of the quarter laid on the thick bushes perhaps as many as one-third survive to the last instar. Incidentally, most experienced collectors estimate that, in the aggregate and taking all types of bush together, there is only one larva in the full spring to about six in the autumn. There is, of course, the *further* hazard of really late frosts which may cause the loss of half the larvae that have reached their last instar on the sparse bushes; but which will have a negligible further effect on the thick willows which by then will be well foliated.

It may be noted that whereas in captivity mortality is highest in the first instar, in the natural state mortality is greatest over hibernation. There is a further point of disagreement regarding the relative effects of hard and mild winters under natural conditions. When birds were not so plentiful, a greater proportion of *iris* larvae survived in hard winters; since, undoubtedly, a cold winter is more beneficial to the actual health of the larva (as may still be deduced from the case of larvae kept in the protection of captivity). But of recent years, *and taking all factors into consideration*, it seems probable that in the woods there is a greater proportion of survival after a mild winter.

The next point to consider is the egg-laying orientation. The afternoon sun in spring and summer is actually fatal to the unprotected

larva; and it is found that in nature the female will lay her eggs exclusively on the north-east sector of those salallows, only, which are shaded from the south and west. Some salallows chosen are big enough to supply their own shade, and the same consideration applies, of course, to Lombardy Poplars; but even so, only the north-east quadrant of the tree is used. There are two other known requirements of the bush (besides the many that must be unknown!): it must be partially protected by low vegetation—brambles and so on—in such a manner as to make it impossible to walk round; and it must be conveniently accessible from a dropping-off point (affording rest and refreshment), which is usually on Oak but sometimes on Ash.

It appears that not only must a tree be accessible from the north-east to the insect for laying, but that it must also lie open on that quarter to the breeze. Mr. Stockley has demonstrated to me an instance in Sussex where the laying bushes are as favourably placed to the insect as ever they were, but where a fir plantation on the other side of the ride has grown up to such an extent as to shield the salallows from even the smallest puff of wind from the north-east. In consequence, the Purple Emperor has deserted this site, which was once a very favourite one, as a breeding-ground. It seems probable that there is a quality of combined cold and dryness in the north-east air which helps to inhibit virus infection without injury to the larva. The deduction is the more interesting, in view of the fact that this is the one direction of wind which the adult insect will not face.

I have spoken of "dropping-off" points. These are essential. It is to be noted, however, that when the canopy closes completely over the salallows (including along neglected rides), *iris* will desert that locality. It is probable that the extinction at a formerly well-known locality in North Kent actually was largely due to this cause. Now that the rides have been trimmed there, the Purple Emperor is returning.

Regarding foodplant, undoubtedly there is a general preference for the Broad-leaved Sallow (*Salix caprea*) over the Narrow-leaved Sallow (*S. atrocinerea*) as a natural pabulum. I am fully prepared, however, to accept that there are local predilections. Another species for which there may be a local partiality is Aspen (*Populus tremula*), a well-known foodplant on the Continent; for example, the very large race which formerly inhabited Orlestone in South Kent, but which presumably is now extinct, may have been aspen-feeding. Quite apart from any local predilection for it, however, I think that Aspen may play a greater part in the ecology of the Purple Emperor than is generally supposed. There is some indication of periodic "shift" of foodplants, with which I shall be dealing elsewhere.

It is, perhaps, worth mentioning that *iris* larvae are very much more easily spotted, when being searched for, on *S. atrocinerea* than on *S. caprea*. Also, owing to the smaller size of leaf in the former species of plant the larva is much more prone to rest on the stem. It is also notable that *iris* larvae feeding wild on the Narrow-leaved species produce not only smaller but earlier imagines than those feeding on the Broad-leaved species. Also, regarding rearing in captivity, there can be no question of the greater suitability of *S. caprea*.

Regarding the preference for Broad-leaved Sallow when laying in the wild, even when there is very little of it and much of the other

species, it is interesting to adduce the experience recorded by Mr. H. C. Dunk in his paper at page 135 of *The Entomologist's Record*, Vol. 66, (May 1954).

I have alluded above to the time of egg-laying. There is fairly general agreement that the wild female lays most (but not all) of her eggs between 11.0 and 1.30 B.S.T., i.e., from two hours before noon until half an hour after it. It is evident that she must warm herself for an hour or so before laying. When, however, as has happened on many days in the summer of this year, conditions are sunny and warm from early morning, then she may start to lay much earlier than these times. Incidentally, under such conditions, a captive female Emperor, reserved for the purpose, should always be sleeved early. Mr. K. E. J. Bailey in a previous summer, during very hot weather, saw a female on horse droppings at 7.30 a.m. which, on then being disturbed, immediately flew to a willow bush and deposited an egg.

I think it is a mistake to suppose that an individual female rarely lays more than one egg on a bush. In Wiltshire, I am convinced that she lays two eggs on a bush, usually on the same leaf, more often than she lays one. The laying of more than two eggs by one individual on one bush would certainly be exceptional anywhere, save in consequence of injury or disability which prevents her from moving about freely. Last year, I had such a windfall, of a nature so bizarre that I will not go into details, save to mention that it was not individual eggs which caught my eye but a cluster—more like that of a moth—though it is only fair to observe that such a laying system is normal in some North American species of the sub-family Apaturinae. I need add only that I put out again, in the woods, every one of the resultant larvae.

I have mentioned elsewhere a slight difference between the egg-laying habit of the Wiltshire race and that of certain other local races of the Purple Emperor. Whereas in Sussex, say, one sees the female flying down a ride and visiting several bushes before repairing for refreshment, in Wiltshire one rarely sees the female visit more than one bush between recourses to the oaks. This does not mean that she does not normally wander far afield in her ovipositing: indeed her instinct tells her she must do so in order to avoid in-breeding, but always via the oaks.

Bad weather conditions will not deter the female from actual laying: but it must be stated as an additional disadvantage of inclement weather that it tends to inhibit the mixing of the stock above indicated. After a laying season of bad weather, eggs and larvae—while probably just as numerous—will be less scattered *from any one individual*. This is because the mother has had less inclination, owing to the unfavourable conditions, to fly abroad from her principal station in the oaks, but in lieu has just visited the willow bushes in the immediate vicinity thereof.

Here it may be mentioned that for all races a small nook off a path or ride is a favourite laying place.

I have only once seen a female Purple Emperor "striking" a tree, and that was in search of sustenance from an oozing oak trunk. But I have several times seen males doing so, whether for the same reason or just to thread a short cut through the branches or to surprise a rival or seize a female. So violent is the action that it seems impossible that the insect can pull up or swerve in time to avoid dashing itself to



pieces. I have never at all seen a laying female so approach the swallow; always, in my experience, the action has been slow and deliberate. Admittedly the old New Forest specimens had ways of their own, as indeed had the old New Forest collectors. But, even so, so fast can *iris* fly when proceeding as I have first described, that it must often be difficult to distinguish the sex; and I strongly suspect that a specimen "striking the swallow" may usually not have been a female laying, but a male looking for a female—especially in windy weather when the females seem to shelter in the swallows.

In captivity a female, under favourable conditions, will lay out her normal batch (from one fertilisation) of 20 to 40 eggs in three days. Her total potential clutch is about 120 eggs, but it is probable that in the normal year, even where the requisite number of acts of fertilisation take place, the full complement is rarely laid. A fully laid-out female, caught wild, is a rarity; although I had one such in 1956. Every now and then, however, in reaction to some factor, there appears to be a mysterious impulse for the females to lay more eggs than usual, perhaps even up to the maximum of which they are physically capable. There have been a very few instances of the maximum potential, or nearly so, being laid in captivity; this must be as a result of super-foetation or else of an abnormally potent single union, which latter phenomenon may also occur in certain years of need. I have a note of one instance when between 80 and 90 eggs were laid in three days, and there is W. A. Cope's instance, quoted by Mr. Hyde (1954, *Entomologist's Record*, April, Vol. 66, page 99), of about 100 eggs being obtained.

In 1933, a year of abundance, the total egg-lay was—as I understood from Mr. Frohawk—but little above average, as if some instinct had instructed the females that no special effort was required. The opposite, as already indicated, was observed in 1956 which, although itself a good year in most areas, presaged—from causes of disease or otherwise—a mostly very lean one.

It is noteworthy that Mr. Stockley has attempted a "caesarean section" on an egg-laden female which had died without laying, but this was unsuccessful. The techniques required, assuming of course that the ova have been fertilised, may yet be perfected.

During copulation, which commences on the tops of the higher oaks so as to have some height in hand at the outset (since height cannot be maintained thereafter), the female carries the male. After the act of union the female will continue to be accompanied by her mate, both in flight and repose, until she actually begins to lay, which may be some 48 hours later. It is a mistake to suppose that it is the worn and battered female which is likely to be the "good laying hen". An individual in such state is much more likely to be one who has some time since laid all she wants to, or can, lay; and who hence has devoted the considerable period of her life outstanding to the full enjoyment thereof. I have remarked previously (*Entomologist's Gazette*, Vol. 8, page 231) that, during this period and until exhaustion supervenes, the habit of the female—in hours, display, sportiveness and so on—approximates to that of the male. If she has not been obliged to exert her full capacity in egg-laying, she may have a further fortnight or more in which to enjoy herself.

A female will keep herself remarkably spruce and tidy during courtship, mating, and the laying of at least her first batch or two of eggs.

Since normally the female first mates within a day or two after emergence, the odds are that that "perfect fresh" female, which is so cheerfully killed for the cabinet, is in fact the potential layer of golden eggs; whereas the tattered and transparent lady, "not good enough for the cabinet but just right for laying", nine times out of ten will lay nothing at all in the cages of the captor.

"Belfield," Burnham-on-Sea, Somerset. 8.xii.1959.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

TWO SCARCE CHALK INSECTS. Now that *Hypercallia christiarnana* L. has been re-discovered, I think a good search should be made for two other Kentish insects which I took fairly regularly thirty years ago. These are *Oxyptilus pilosellae* Zell. and *Laspeyresia caecana* Schlag. It is possible both are being overlooked, so I will enter into a few details concerning each.

It is not likely that *pilosellae* is escaping notice should a collector be in one of its restricted localities, as it is quite active, and at the same time, of weak flight, so is easy to find and secure. It is, however, rather like a worn *O. britanniodactyla* Gregson, and as it appears about a month after that insect, may possibly have been released as such.

It is, however, a very distinct insect. Apart from its slightly smaller size and more slender wings, its colour is deep cinnamon brown, and its markings when fresh are pale buff, or, at most, off-white. *O. britanniodactyla*, although a little variable, is always a black and white insect. I have one in my series which is black, flushed with green, and Mr. S. T. Wakely recently showed me another one with a reddish flush, but *pilosellae* is basically red-brown with no admixture of black. The final difference between the two is in the large tuft of scales on the third plumule of the hind wing. In *britanniodactyla* this is very large and proceeds from both sides of the shaft; in *pilosellae* it only springs from the lower side.

*Pilosellae* appears on the wing about July 24th, about a month after the other insect; it may be disturbed at any time of the day, and flies freely in the late afternoon, whereas *britanniodactyla* is hard to disturb before the early evening.

I think all the few collectors who have taken *pilosellae* found it fairly commonly in a most restricted area. I know that this was the case with the old Mickleham collectors, and also Sydney Webb, Purdey, and myself. My own locality was a bank on the chalk downs about 60 yards long by 15 yards wide; I first found it there in 1916, and it was still there in 1931, since which date I have not been near, but I expect that it was destroyed during the last war. I restricted myself to about a dozen a year, and did not go every year.

The larva can be found in May in the central rosette of *Hieracium pilosella*, destroying the incipient flower shoot, but it is easy to overlook, and not likely to be seen until the moth has been discovered in the previous year, and a hard search instituted. Mr. L. T. Ford has a single specimen of this moth, taken many years ago near Bexley. I do not think he ever found another, but in all probability in such a built-

up area, the moth was a last survivor. The insect taken by Coverdale in Surrey in 1881, referred to as *hieracii* Zell. by Tutt in *The Pterophorina of Britain*, p. 69, is in my possession; it is a dark *pilosellae*. At Tutt's sale, it was purchased by Nevinson, and at Nevinson's, with many other insects, by B. S. Harwood, from whom I obtained it in exchange for a series of fresh Kentish *pilosellae*. *Hieracii* Stt. is *pilosellae*, and I do not think *hieracii* Zell. has ever occurred here.

My other insect, *Laspeyresia caecana* Schlag. has, I imagine, been overlooked, unless taken and not recorded. From 1922 onwards, I took it in many coastal dips in the chalk between Margate and Folkestone. It is rather an obscure insect which may be disturbed in the afternoon, and buzzes round the plants of sainfoin, which it affects, in the early evening. Its localities are grassy hollows where scattered clumps of sainfoin occur, and it is on the wing for about three weeks from the last week in June. Barrett (XI, 221) says that Coverdale bred it from a larva feeding in stems of sainfoin. I never succeeded in finding it thus, and think this must have been an exceptional case, and that it usually feeds elsewhere in the plant. Perhaps it may be discovered by one of our more energetic and younger collectors.

## Honest Doubt

By H. C. HUGGINS, F.R.E.S.

I was greatly interested in the paper "Some Observations on the Crimson Ringed Butterfly (*Parnassius apollo* L.) in Britain" by Messrs Morley and Chalmers-Hunt (*Ent. Record*, 71: 273).

There seems to me, from the details given, a strong possibility that the specimen taken by Mr. P. L. Scott at Folkestone Warren on 3rd August 1955, was a genuine immigrant. An additional argument in its favour is that in late July and early August 1955, there was a large influx on the east coast from Dungeness to Bradwell-on-Sea of *Eurois occulta* L., accompanied by a fair number of *Plusia interrogationis* L. All the specimens of *interrogationis* that I saw had a curious leaden ground-colour, quite different from that of any northern British or Irish ones that have come under my notice, whilst the *occulta*, of which I saw many and reared a large brood, were characterised by a brilliant pink flush on the disk of the forewings.

The late Dr. Cockayne informed me that these forms were of a Continental race from the western slopes of the Alps, and it seems possible that the *apollo* may have formed a member of this migration. Last year (1959), a similar migration on a much smaller scale, seems to have taken place. I have not yet made many enquiries, but Mr. D. Down took a leaden *interrogationis* here in Westcliff, and a few *occulta* occurred in Essex. *Occulta* has been known to appear on the east coast from time to time, but *interrogationis* was unknown until 1955; however, all the *interrogationis* were taken at m.v., and as, unlike *occulta*, it does not come to sugar freely, it may often have been here before without having been noted.

The other *apollo* records do not impress me, as the authors say they are mostly hearsay, but I will comment on two of them that seem better founded. No. 15: My late friend, A. F. Common several times showed me this insect; it was a small one that appeared to be a bred specimen.

In the same cabinet was a small obviously bred *Papilio podalirius* L. and a *Utetheisa pulchella* L. Apropos the last insect, I was asked after Common's death, if I knew what had happened to it, and on my reply that I neither knew nor cared, as it was obviously Continental, my enquirer said he had always understood that Common had caught it at Thorpe Bay. So do records arise!

No. 9: Wollaston saw the specimen said to have been taken on the cliffs at Dover. In the account given in "Newman", the captor stated that it settled near him and he put his hat over it. He then took it home (presumably he was carrying a sheet of cardboard to slide under the hat) and released it in his lodgings. These picturesque stories, like the man who laughed at Moody and Sankey and was struck by lightning, were beloved of our ancestors; to me such details would discredit the multiplication table. The last line of Wollaston's letter conveyed a sinister suggestion that the captor was about to dispose of his treasure for gold.

No. 10: I love the anecdote of the man who saw an *apollo* at Hanwell; perhaps he later saw a *podalirius* at Colney Hatch.

I have in the past been brought in contact with a good many of these rum records, and an account of some I followed up may amuse if not edify readers.

*Daphnis nerii* L. In 1929 my wife and I were staying at the Wheat-sheaf, Yarmouth, I.-o.-W., when a local resident told us that a month before he had found a very large bright green hawk moth in his greenhouse. I expressed great interest, and the next evening he came with a box in which was a forewing, all that remained of it. It was of a typical grey *Laothoe populi* L., not even of the sage green form. In 1948, Mr. J. T. Friedlein of North Farnbridge wrote to me that some people he knew had a *nerii* found on an ant-hill at Little Baddow, Essex, and that he would get me full particulars to record. When he called again, however, a son was at home who told him that his parents had mixed up the insects and that he had taken the moth in Iraq when on military service.

Four years ago, my late friend Edelsten wrote to me that he had had a telephone call at the Museum from a professional man, a Bachelor of Science, living at Thorpe Bay, that he had got a *nerii* alive at his house; he had identified it from South's figure. I went over at once to see it, and found a green male *Mimas tiliae* L., and not a large one at that.

*Lycaena dispar* Haw. In 1906 I was collecting near Lowestoft when I met a young fellow of about 18, named Alec Whiting-Baker. He showed me several good local marshes in one of which I took my first two specimens of *Platyptilia isodactyla* Zell., and much surprised me by telling me that a local schoolmaster, Mr. Singleton Smith, had taken a large copper near this place. I called on Mr. Smith, who kindly showed me his insects. He told me that he had taken *Nymphalis antiopa* L. at the place mentioned. He also showed me two beautiful *dispar*, but they had been given him by W. C. Hewitson when he was a small boy (he was between 60 and 70 when I met him), and my informant had muddled the two species.

In 1926 when I was at Faversham, a local farmer showed me a case of insects taken in the district by his late uncle. He pointed out with pride a large copper; it was a rather small typical *L. rutilus*.

I now come to a couple of cases of accidental substitution, both by good naturalists. In the early thirties, my wife and I used to stay with the late Samuel Tuke at Colwell, Devon; he was a delightful host, and many good insects, including *Lampropteryx otregiata* Metcalfe were common in his grounds. He had quite a good collection, and one of his most treasured insects was a marvellous aberration of *Pararge megera* L., which he had taken near Hitchen as a boy, some sixty years before. I had never the heart to tell him it was a typical *P. maera*. He used to go abroad almost every year in his youth, and had given up collecting for many years, and taken it up again late in life; doubtless, his *megera* aberration had been destroyed, and he had thought the *maera* to be it after the lapse of time.

In 1936 the late T. M. F. Tamblyn-Watts, F.R.S.A., a local botanist of some repute, who had published a couple of books on the subject, told me he had a Camberwell Beauty for me, which he had taken some years before in the Lake District. I called, and he gave it to me (it is still in one of my duplicate boxes). It is the well-known Canadian race, in which the light border is thickly obscured by brown scales. Tamblyn-Watts had lived several years in Canada.

It may also be of interest to note that a good many collectors in the past used to label their bred insects from their home town and not from the place of origin of the eggs. At Debenham's sale on 29th October 1959, Lot 56 consisted of "5 *luctuata*, bred Hedges, I. of Man". Mr. Goodson called out, when the lot came up, that the origin was Ham Street. Hedges seldom labelled his insects at all, and no doubt forgot to tell the recipient their origin.

Finally, faked records can occur, especially in the young, from nothing but vanity. In August 1935, a Mr. Sweeting, a visitor, exhibited alive at a meeting of the South Essex Natural History Society a lovely female *Pontia daplidice* L. which he had taken that morning at Shopland, near Southend. Two months later, a youth who was a member, showed two set specimens which he said he had taken at Shopland the following day. My friend, Dr. G. H. T. Stovin, and I thought they both looked a bit old and dry, but left it at that. The following June he exhibited a live *Celerio euphorbiae* L., said to have been found on the shore at Shoebury. In early August Dr. Stovin caught two *Colias crocea* Fourc. ab. *helice* at Thorpe Bay and gave me some eggs from which I reared some of the extreme ab. *pallida* Tutt. I exhibited these and at our next meeting our young friend brought along two more, set, he had caught at Thorpe Bay. Unfortunately, he had gone astray this time, and they were females of the Continental *C. phicomene* Esp. He was then asked some searching questions, and owned up that the *daplidice* and "*helice*" came from Watkins & Doncaster, and the *euphorbiae* had been given him at the zoo, where a lot were being reared for exhibition alive.

These are just a few samples which may explain my somewhat sceptical outlook.

Some rural Kammerer here did raise his head,  
Whose records have bewildered young and old,  
Some rustic Button foreign insects bred  
Which to the village naturalist he sold.

## *Pammene aurantiana* Staud.: Discovery of Larvae

By S. WAKELY

Following the notes by Mr. Chalmers-Hunt on the discovery of this species at Mickleham (*Ent. Rec.*, **71**, 222) and the further note of finding larvae similar in appearance to *Pammene regiana* Zell. feeding in the seeds of common sycamore (*Ent. Rec.*, **71**, 246), it is pleasing to be able to report that single specimens of both *regiana* and *aurantiana* have already emerged from the larvae taken. Of course, the normal time of emergence is in May or June, but when one is breeding numbers of a particular species indoors, these occasional early emergences are not at all unusual.

The specimen of *regiana* emerged on the 6th October, and our chances of having any larvae of *aurantiana* seemed to recede. However, on the 19th December a fine specimen of *aurantiana* was found resting on the piece of wood in which it had pupated, with the extruded pupa case nearby.

Dozens of the larvae which I had were examined under a lens and I could detect little difference in any of them, although the skin of some appeared to be slightly more wrinkled than others.

My method of dealing with the larvae was as follows. I had some soft wood taken from a dead poplar—the kind referred to years ago as tinder or touch wood. Using a 3/32 inch drill, I bored numbers of holes in this about half an inch in depth. An electric drill is a great help for this operation as this wood is so very soft. I used pieces about three inches long and an inch square which were riddled with these holes about a quarter of an inch distant from each other.

The sycamore seeds were packed into the transparent plastic containers sold in large stores as lunch packs. Different size packs were used, the most convenient size for this purpose being 6 in. by 4 in. by 2½ in., although a smaller size—5 in. by 3 in. by 3 in.—was also used. Folded tissue paper was placed in the containers first and the seeds placed on top with another piece of folded tissue on top. This tissue paper (sold commercially as handkerchiefs) is indispensable for this purpose.

Every evening the containers were examined for larvae which had left the seeds, the paper being renewed every three or four days. Any larvae found, which varied in numbers from one to twelve a night, were transferred to containers similar to those used for the seeds but which contained the wood previously mentioned. I found it most convenient to handle each larva separately and insert its head into a vacant hole, when it invariably disappeared rapidly and within a short time had sealed the opening with webbing and minute particles of wood.

Some of the larvae spun up in the paper and constructed cocoons which were strengthened by a red fluid which was ejected by the larva and which quickly hardened. This red fluid could be seen under the skin along the back of the larva when full fed, and the habit is common among many species of both macro and micro lepidoptera. The cocoon of the puss moth is an example, although the fluid used in this case is not so dark in colour.

Several friends collected sycamore seeds from the Mickleham locality, including Messrs. L. T. Ford and R. Mere, and of course Mr. Chalmers-

Hunt and myself. It is most unlikely that my specimen was the only *aurantiana* present and it will be most interesting to find out later the proportions that emerge of these two species of *Pammene*.

Cocoons of *regiana* can be found readily during the winter months under the flakes of bark which are one of the features of sycamore tree trunks. However, this can be disappointing, as the majority are old and also it is important not to break the cocoons, which contain immobile larvae until pupation takes place, probably in April. There is little doubt but that *aurantiana* pupates in exactly the same manner.

The sycamore seeds containing the larvae were collected on the 5th and 12th September. I also collected seeds at Boxhill on 10th October which contained larvae—probably *regiana* in this case. I also collected some sycamore seeds at Dulwich, and the larvae from these appeared to be identical with the Mickleham ones.

I wrote down a description of the larva as follows: Larva whitish. Spots fuscous; one above and one below each spiracle. Four more dorsally on each segment, the anterior pair being slightly closer together than the posterior pair. On last but one segment the four dorsal spots amalgamated into a single larger irregular mark. Dark mark at anus.

The arrangement of the spots appears to be similar in other species in this and allied genera. *Pammene juliana* Curt. and *Laspeyresia splendana* Hb. were two species I compared them with and was surprised to find the spots arranged in the same formation.

We were most fortunate in obtaining this hitherto undiscovered larva at the first attempt. All there was to go on was the fact that the continental authors state that the moth occurs "among *Acer*" (sycamore and maple) and the larvae could have been either seed, leaf or under-bark feeders—even if actually on these trees. None of the British captures of the moth were near sycamores—until the Mickleham records—which raised doubts as to whether this was actually the foodplant.

26 Finsen Road, London, S.E.5.

## Notes and Observations

A SECOND BROOD IMAGO OF *APATURA IRIS* L.—Further to my entry in the December issue (*Ent. Rec.*, 71: 296) I wish to report that the second larva, then reported as feeding up, completed all stages: pupated 14th November, and a ♀ imago emerged on 30th November, span 68mm.

Owing to the risk of obtaining fresh sawfly in late Autumn I switched to common poplar—the larva preferred this and moved straight away on to it and commenced feeding. I then stored ample supplies of young poplar twigs inside polythene bags, the leaves kept fresh for several weeks, but withered within one day in room atmosphere.

I then placed portions of same inside a glass bell jar on top of my heating stove. This maintained an inside temperature of circa 70° F.—the poplar remained fresh and the larva fed well and pupated one evening. The outside temperature at this time was about 45/50° F. with frost at night. I hope this information may assist other readers should they be presented with a similar problem. This second larva, unlike the first, must be considered as partly forced.—M. H. EDMONDS, "Gaveston," 938 Warwick Road, Solihull, Warwickshire. 20.i.60.

ON THE HIBERNATION OF *SCOLIOPTERYX LIBATRIX* L.—In the December number of the *Record*, Brigadier H. E. Warry and the editor made mention of the hibernation of *Sc. libatrix*. To this discussion I can add an experience I had years ago, when I, in the middle of the winter, came across a chambered barrow, which was open to visitors. I took a fancy to have a look at the interior of the sepulchral chamber, which was about 3 yards broad and 8 yards long with a ceiling made by 4 large top-stones.

When I examined the structure of the chamber I noticed that the top-stones were densely covered by hibernating specimens of *Sc. libatrix*, which, especially along the rounded edges of the top-stones, sat so closely that they touched each other.

Unfortunately, my only illuminant was a box of matches, so I was not able to count the moths, but there were at least several hundreds present. They sat only on the top-stones and, as far as I could make out, no other species was present neither on the top-stones nor on the walls of the chamber.

*Scoliopteryx libatrix* L. is well known on the continent as a cave-hibernator and though it, to judge from Brigadier H. E. Warry's note, must be a more common species in Denmark than in England, it was indeed a very extraordinary experience to find so many hibernating in one place.

One can not help wondering how so many specimens of a single species have been able to discover this "cave" as it was placed in quite open farmland on a very extensive turnip field, where no *Sc. libatrix* had anything to do and further the entrance to the barrow was extremely narrow and closed by a tiny door with but 4 rather small apertures for ventilation.—A. G. CAROLSFELD-KRAUSE, Slotsherrens Have 97, København-Vanløse.

*SCOLIOPTERYX LIBATRIX* L. IN HIBERNATION.—Brigadier H. E. Warry and the Editor mention numbers of *Scoliopteryx libatrix* L. seen in hibernation (*Ent. Rec.*, 71, 278 (1959)). On this subject, some notes from my diary may be of interest.

Along the Pilgrims' Way, near Abinger, Surrey, are a number of concrete pill-boxes and, on 6th October 1955, in two of these were noted "numbers of *Nymphalis io*, *Aglais urticae* and a few *Scoliopteryx libatrix* hibernating on the roof and high up the walls."

Revisiting the locality on 11th October, the following were recorded in hibernation:—

Box No. 77. 8 *io*, 1 *urticae*, 6 *libatrix*.  
Box No. 79. 6 *io*, 2 *urticae*, 64 *libatrix*.  
Box No. 80. 2 *io*, 0 *urticae*, 5 *libatrix*.

Box No. 79 was the darkest, and many *libatrix* were hanging on one on top of the other, in clusters, from the ceiling.—A. J. SHOWLER, 19 Harvel Crescent, Abbey Wood, S.E.2.

MELANISM IN THE SCALLOPED HAZEL, *GONODONTIS BIDENTATA*, CLERCK.—As a melanic strain of The Scalloped Hazel exists in the Dulwich area,



where the moth is common, it was decided in spring 1958 and 1959 to make a count of normal specimens against melanics by searching hedges after dark. A similar count was made of specimens attracted to light, with the intention of comparing the two findings. If the incidence of melanics at light proved much higher, it was thought reasonable to assume that some melanics had escaped notice on hedgerows through some advantage of colour, as it had been shown in the case of *B. betularia* at Oxford (Kettlewell *in lit.*) that melanics were not more susceptible to attraction by light.

Experience of *G. bidentata* is summarised below:—

	Hedges		Various types of light	
	Normal	Melanic	Normal	Melanic
1946, Onehouse, Suffolk	2	0	0	0
1957, Dulwich Village	0	0	1	0
1958, Dulwich	32	2	4	0
1958, Stowmarket, Suffolk	0	0	3	0
1959, Dulwich	71	1	26	8
1959, Dulwich Woods	1	0	0	0

Only two samples are large enough to consider, those for Dulwich 1958 and 1959, but insufficient examples came to light in 1958. In 1959, however, the ratio of melanic to normal on Dulwich hedges was 1:71 as against approximately 1:3 at light. This difference is significant and would seem to prove the advantage of blackness to melanics. Unfortunately, however, such a small sample of only two populations only 300 yards apart, those of the hedges and of the house light, may invalidate any conclusion. The figures may only mean that a melanic strain was strong near the house but sparse in the hedges 300 yards away. On the other hand the imagines obviously mix and spread in flight over a large area. Nevertheless, no small count should be taken to represent any tendency of the local or national population.

If, however, it be granted that there is some small cryptic advantage to melanics, then inspection of the habitat suggests that the critical backgrounds are more likely to be darkly-creosoted fences than any surfaces affected by intense industrial pollution. It would be interesting to know whether melanism in any particular area coincided in time of origin with the habit of substituting creosoted fences for garden-walls.

It may be noticed that neither Suffolk sample produced a melanic, but Mr. E. W. Platen possessed a black specimen (now in the collection of Mr. Chipperfield) that possibly came from Suffolk. The Dulwich form, although it sometimes exhibited intermediate melanism with mahogany bordered by black, often approached South's illustration of *ab. nigra* Prout, which has long been found in the mosses of Lancashire, and in Yorkshire. In Dulwich both male and female melanics were noted but on no occasion was either partner of a copulating pair a melanic. The female of such pairs was always uppermost, still in the position assumed after emergence.—ALASDAIR ASTON, F.R.E.S., 1 Aysgarth Road, Dulwich Village, S.E.21.

## Current Literature

THE OPOMYZIDAE (DIPT.) OF EASTERN FENNOSCANDIA. By W. Hackman 1958. *Notulae Entomologicae* 38: 114-126.

The Opomyzidae were monographed by L. Czerny in 1928 in Lidner's *Die Fliegen der palaarktischen Region* 54c and figures were included of the terminalia of *Geomyza germinationis* L. and *G. combinata* L. and the wings of several species. In 1945, Mr. J. E. Collin's "The British Species of Opomyzidae", *Ent. Record*, 57: 13-16, included a key to the species known in this country, but no illustrations. Dr. Hackman's paper is in English and deals with the species of Finland and adjacent parts of the U.S.S.R. Several of these Opomyzids occur also in this country, and the habitat references, and particularly the figures of the genitalia of 7 species are of great interest to British dipterists, who for many years have benefited from the researches of a high standard of the Scandinavian dipterists. One new species is described and illustrated by Dr. Hackman, *Geomyza breviforceps*, who suspects that the females taken by Mr. Collin in Chippenham and Burwell Fens, in March and August and introduced to the British List as *G. majuscula* Lw., may, in fact, be *breviforceps*, a species described from specimens found in the wet meadows in Finland and Western Siberia.

L. P.

FLORA OG FAUNA, 65: part 4 (1959) carries an important article by Niels L. Wolff entitled "Noteworthy and new Danish Pyralids" in which the *myellus* L. group of the Crambidae is first of all discussed, with half-tone illustrations of the male and female genitalia of *C. permutatellus* H.S. and *C. osthelderi* de Latt. The second part deals with the portmanteau genus *Myelois* and the third records *Pyrausta palustralis* Hübn. which has been taken at m.v. light in the island of Zealand. Part IV mentions *Crambus myellus* L., *Pempelia subornatella* Dup. and *Acrobasis sodalella* Zell. as species erroneously included in the Danish list. Part V deals with species added to the Danish list since 1942, with a half-tone plate and line drawings of both male and female genitalia and a half-tone plate illustrating ten species of Pyralid moths. A very interesting figure gives half-tone microphotographs of the male genitalia of *Mephopteryx rheniella* Zinck. and *N. hostilis* Steph., two species thought by some to be one, side by side for comparison. Finally, in part VI, some species which the author thinks ought to be found in Denmark are listed. A note on *Acrocephalus palustris* Hübn. in Bornholm by Rene Melchior-Hansen follows, and *Pararge petropolitana* F. is recorded from Denmark by Klaus Polsen.—S. N. A. J.

ALEXANOR 1: Part 4, 1959, carries an article by Y. de Lajonquiere on relaxing and setting dried lepidoptera, H. Marion continues his revision of the French Pyraustidae with text figures of anatomical details, and Jean Bourgogne continues his account of books on lepidoptera usually available in libraries.

Raymond Gaillard writes on the skippers and butterflies of the department of Gard, G. Varin writes on collecting in Morocco, and P.

Dardenne writes on collecting at home with a lamp. Finally J. Bourgonne records *Heteropterus morpheus* Pall. from Finisterre.—S. N. A. J.

HANDBOOK FOR THE IDENTIFICATION OF BRITISH INSECTS, VOL. 1, Pts. 12 AND 13, 40 PP. MECOPTERA, MEGALOPTERA, NEUROPTERA. BY F. C. FRASER. ROY. ENT. SOC., LONDON. 10s.

This excellent handbook on the vein winged insects is alive with interest for the non-specialist and specialist alike. A large amount of interesting information on the biology and habits of these insects is given. The notes on distribution and habitats of each species are very adequate. The keys are clear and practical. A full glossary of terms used is given at the end. The illustrations, all finely executed by the author, are as clear and lively as the text. We are grateful to Lt. Col. Fraser for a handbook that will be of great interest and enjoyment to every field collector and biologically-minded entomologist.—C. A. C.

BEETLES OF THE BRITISH ISLES. BY E. F. LINNSEN. 2 VOLS., EACH ABOUT 300 PP.; 19 PLATES IN COLOUR, 20 PLAIN; NUMEROUS TEXT FIGURES, ETC. WARNE. 1959. WAYSIDE AND WOODLAND SERIES. 60s.

These two handsome volumes fully uphold the high standard of production expected of this justly popular series. After introductory chapters on Structure, Metamorphosis, Distribution, Social Behaviour, and Nomenclature and Classification, which on the whole fulfil their purpose admirably, our beetle fauna is passed in rapid review with a conspectus of all taxonomic groups down to generic level and short descriptions or notices of a great many species\*, which in conjunction with the illustrations will ensure correct determination in the majority of cases. The quality of the plates is in general good, though uneven in the coloured ones (based on those of Fowler's great work), some being very much more successful than others in capturing the likeness of the actual insects. The uncoloured plates and figures are almost uniformly good and accurate, and an excellent feature is the large number of beautifully executed drawings of larvae and often pupae (many after Schiödte). Mr. A. F. Stuart is to be congratulated on the part he has played in illustrating the book so well. Much attention is given to classification; a novel feature is a 'concordance' in which are set forth the various schemes most used in our past literature for dividing up the vast suborder Polyphaga, so as to show their inter-relations. The author has further been at commendable pains to connect the Fowlerian names with their modern equivalents where they differ, which should prove useful to those possessing or able to consult the earlier works. This is a real service which modern books and catalogues too often fail to provide. The classification adopted is largely that of Kloet & Hincks' Check List, but some concessions are made to the radical

\*The publishers' claim that the work 'gives a full description of all the common species found in this country, as well as most of the rare ones' (italics ours) is, we fear, a great deal too sweeping; no book of this size could do that. If, however, a more concise and economical style had been adopted, room would have been made for brief diagnoses of many more common species.

rearrangement proposed by Crowson (1950), in that, for example, the Strepsiptera (Stylopoidea) are once more treated as coleopterous. It is a pity that, in citing species, authors' names are given in the much over-abbreviated forms used by Hudson Beare (1930), but, as a key to the full names is included, this is only a minor fault. An ample bibliography (inevitably a somewhat arbitrary selection), glossary, and index complete each volume.

We should have liked to close in this favourable vein. Unhappily, however, we cannot in honesty gloss over the fact that the text is marred by a very great number of errors and inaccuracies. These, with the fact that Mr. Linssen seems to have left out of account all species added since the 1945 Check List—a considerable tally, some specially notable for the way in which they have spread since first detected here—and moreover depends for notices of distribution, incidence, and habitats almost wholly upon the work of Fowler—monumental, it is true, but now 60 years and more out of date—cannot but weigh heavily against the book's scientific value. What is obviously lacking is present-day field knowledge of our beetles—a deficiency that might, we feel, have been made good to some extent by consulting beforehand any coleopterist with considerable and recent experience of collecting in this country. It is in such details, important for a work of this scope, that its main weakness lies. There is not the space here to launch into a full-scale critique, but it is hoped to list elsewhere all the more serious mistakes and obsolete data with a view to their being corrected in any future edition. If an instance be needed, suffice it to point out a double error: on Plate 13, not only are the figures of *Helophorus aquaticus* and *H. rufipes* numbered the wrong way round (so also the letterpress references), but the latter of them, in fact, very clearly represents *H. porculus*—a species not mentioned in the text.

To sum up, we should not wish it to be thought that the grave shortcomings of this book outweigh its merits. The latter are real and will, it is to be hoped, ensure for it a wide sale; for in any case—while, of course, no substitute for the almost unobtainable 'Fowler' or 'Joy'—it is more than an elementary popular introduction and is not merely the best but indeed the only thing of its kind now generally available to the beginner or interested layman. It should act as a stimulus, take him a considerable way in his chosen study, and guide him on the path of further inquiry.—A. A. A.

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CORRECTION.—In my review of the Proceedings and Transactions of the South London Entomological and Natural History Society (*antea*, p. 23), I regret to say that I have ascribed the paper on British Anobiidae to Mr. F. D. Buck. The retiring president was, of course, Dr. Norman E. Hickin, and he is the author of this paper. I offer my sincere apologies to Dr. Hickin for this lapse.—S. N. A. J.

Pages 41-48 have been removed and will be found as pages 1-8 of J.M Chalmers-Hunt's "Butterflies and moths of Kent: a critical account, volume 1: Rhopalocera" which is separately bound.



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The following gentlemen act as *Honorary Consultants* to the magazine:

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## TO OUR CONTRIBUTORS

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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*Edited by S. N. A. JACOBS, F.R.E.S.*

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# The March of Progress

## Or 39 Years' Experience of a Lepidopterist on the Northern Side of the New Forest

By C. M. R. PITMAN

Many drastic environmental changes have occurred within the precincts of the New Forest, events which have had serious repercussions on the ecology which existed in the palmy days when my collecting adventures and experiences began in the spring of 1920.

It was a lovely week-end when, my enthusiasm whetted by stories of the pioneers concerning the rich abundance of lepidoptera to be found there, I needed no further encouragement to travel further than was my wont, and to explore the expansive territories of the Forest, and set out on my bicycle heavily laden with collecting gear. Soon, flushed with the hard ride and full of anticipation of the chase, I was following close on the trails carved in the Forest by those eminent collectors of the past (a habit which is monotonously repeated down to this very day) whose unbounded energy and skill had bestowed on the Forest its reputation as, par excellence, the entomologists' Mecca.

It must be remembered that for me, in those early days, long distance expeditions were few and far between, when my only means of transport consisted of a very ordinary bicycle, which still remains in my possession, although somewhat the worse for wear, and my time was not always free. The bicycle has long since been pensioned off, but it still bears the deep stamp of the travelling entomologist; the handlebars have ceased to shine, but they still bear peculiar-looking improvised brackets at convenient places for the purpose of carrying even more entomological gear. Admittedly, some of the gadgets were never used or even called upon for action, but one never knows; when the heart is young and enthusiasm is at its peak, all possible emergencies must be catered for. I shall never forget the hours spent during off-season evenings when spring is approaching, how meticulously I overhauled all my collecting apparatus and odd bits of paraphernalia, boxes, nets, bags, tubes, killing jars, relaxing tin, chip boxes, and spare items down to a needle and cotton. Of course, a lot of this gear was never used, but it is surprising how many times I have been caught empty handed at a crucial moment; no box of the right size, net will not go on to the ferrule, and a wonderful variety (or was it?) has just flown by to be seen no more, but one is so certain that it really was something good, and for the rest of the day one has a fleeting vision, which recurs on subsequent occasions when one visits the spot. A very important feature of that decrepit bicycle, still firmly fixed in the correct place, is an old, and at one time indispensable acetylene lamp which has done so much overtime in the past; work of inestimable value even though on lamentable occasions it has caused no small provocation either by catching fire or going dry at the vital moment, just when it appeared that things were at last beginning to fly. Of course, this always happens, time and again, after a very quiet evening devoid of excitement one has decided to pack up, when something desirable comes along, and one waits a little longer, but nothing else comes, and one starts to pack up again. The per-

formance is repeated until one decides that it is definitely time for home, and lo and behold! it is 3.30 a.m., and what has one got? Well, never mind. Dear me, we entomologists just cannot tear ourselves away just like that; it is the glorious uncertainty of the chase that makes our collecting so very exciting and makes us loth to leave; we have all experienced those moments, and how much it is against our inclination to pack up and go home.

Now we must really get back to the Forest, where lovely lilac forms of *areola*, *biundularia* and *fagella* are there in most variable forms from black to almost white, sitting around awaiting your approval on tree trunks and odd pieces of fencing scattered along the forest highways, while, on the heaths, *pavonia* will be careering in frantic haste in all directions.

There used to be a forest gate at the boundary, which was closed at sunset and opened at sunrise. On one of the main supporting posts was placed an oil lamp, lighted at sunset to warn travellers that the forest road was closed, maybe to keep the ponies and cattle from straying, or maybe its purpose was to maintain forest rights; in either case, it could well be applied throughout the Forest to-day. I am told that £5 per year was paid to the person who was employed to attend to the lamp and open and shut the gate. From this lamp, many interesting species were taken, some of which were rarely acquired by any other means of collecting, and on returning from a nocturnal expedition it was a joy to find *fagi* sitting there together with a female *M. rubi*, and, on one memorable occasion, four *quadra* were sitting around the lamp, more than it has been my pleasure to see before or since at any one time.

Alas, the gate has disappeared, but a gnarled post remains as testimony to more carefree days, and as a legacy of the war when a vast area within the boundary was needed as a bombing range and for other war-time activities, there came miles of field communications, huts for the personnel, huge areas of concrete slabbing and roadmaking across the heath and through the enclosures, trenches dug that were never again filled in, and many other works of forest destruction, all contributing to the detriment of the insect fauna of a very valuable collecting area of heathland. This heathland was the habitat of *ericetaria*, *belgiaria*, *hippocastanaria*, *aenea*, *dipsacea-cum-maritima*, *myrtilli*, *pavonia*, *aegon*, and a most wonderful form of *semele* with a lovely reddish underside.

In another part of the Forest not so far distant can be seen hundreds of acres long since commandeered as an airfield complete with miles and miles of macadam and concrete runways, hangars and hutments, now an abomination of desolation; the runways a playground for learner car drivers, whilst others with more dexterity race madly round the dishevelled hutments and derelict hangars. Shortly after this unwelcome occupation, an enemy bomber came whining and screaming from the darkened skies to its destruction, tearing a furrow through the heather about twenty feet wide before exploding with a savage roar that echoed throughout the entire Forest, thereafter bursting into flame, ruthlessly destroying a very large area. The flames licked their way unchecked through an area which ironically had just

escaped the increasing demands of a country at war. Other catastrophies soon followed, and it was not long before two of our own fighter planes crashed on an exercise over the Forest, and further tragedies and fires occurred in scattered districts at scattered intervals over the Forest environs. It was one of these fires which charred a forest bank from which heather and ling hung in utmost profusion, erasing at one stroke the long-established home of *agathina*, *neglecta*, *anomala*, *obscurata*, and many others, now, alas, virtually missing from the area. It has left an area of barren strips of ridgelands practically devoid of any vegetation, on which even the heather seems reluctant to grow any more as the only reminder that this forest bank ever existed. Shortly afterwards, in the nearby valleys, a fire of unknown origin raged continuously with savage fury for many days, licking and searing relentlessly through acres of undulating heather and pines, leaving the charred stumps of these trees standing gaunt as memorials to a vanished forest fauna. From these ruined pines it was possible, when they were in their full glory, to hunt for the lovely green form of *prosapiaria*, one of the few known localities for this variety, whilst other interesting inhabitants included *piniperda*, *firmata*, *pinivaria*, *variata*, and the very local *abietaria*; to-day one would have to search long and far in the Forest to obtain a series of the barred red, let alone a green variety, and it would be difficult to obtain a series of the satin carpet.

At the cessation of hostilities, the whole commandeered area became a desolated dump, with miles of tangled link wire and communication wires in masses everywhere, through which the heather gallantly fought to gain a new existence, painfully assisting nature to heal the ugly man-made scars, and slowly but surely smothering the large craters that blotted the beauty of the Forest. These conditions even worsened when the demolition parties arrived, for after desultory attempts at dismantling the huts, concrete buildings, sheds, etc., sheets of galvanized iron, blocks of concrete, pipes of all dimensions, and other impedimenta were scattered everywhere, and it became a scene of chaotic desolation, and was left as such, as though one of the fiery bombs that were at one time secretly guarded in the depths of the Forest had reared its ugly head and spewed contemptuously on the puny efforts of a so-called civilization. Matters did not improve in the least when the relics became the homes of undesirable squatters who within a very short time became veritable forest pests and every living creature that survived the hostilities had a more cunning problem to deal with. Progress continues; right across the forest there is a tormented area that is now decorated with menacing pylons and overhead cables, the erection of which necessitated the removal of the few existing but somewhat scattered pines, striking another blow to entomology in the Forest, for, with the removal of the pines went the last of the struggling remainder of *cinctaria*, always a scarce insect in the district for, although its habitat was amongst the heather, it loved to rest upon the isolated pine trunks, so much so that it almost seemed that this habit was a necessity for its survival there. Who can imagine anyone but an entomologist thinking of that possibility?

Yes, indeed, there have been numerous happenings, mostly of a detrimental and iniquitous nature, inflicted on the Forest since my first expedition, which now seems so long ago; events that have been a very long way from being the least bit helpful to its flora or fauna, for it would be extremely difficult to think if any single happening which could be said to have assisted anyone in the study of the entomology of the Forest.

For the actual collector, perhaps improved road conditions and travel facilities would appear to be very much in his favour, but these have brought great disadvantages, as we shall see later. In the past, many very enjoyable and profitable hours of keen collecting have been spent in the New Forest by a motley but most friendly company; nowadays it would seem that collecting in itself has lost some, if not all, of its appeal to the younger generation; somehow the spice seems to have gone out of collecting, more especially with regard to field work. No, this is not due to my lethargy or to any form of senility, but actual observations accrued during many years of regular visits to the Forest at all seasons. It seems that many moons have passed since my last meeting with another collector laboriously beating for larvae either in spring or autumn, and equally as long since a brother entomologist was seen methodically trunk hunting. As for pupa digging, a practice which has contributed so many interesting specimens to my cabinets, it most certainly would seem to have lost much favour in recent years. Maybe, to the present generation of young collectors, it could be a little too uncertain or laborious. Allowing for the fact that entomologists are few and far between, we most definitely do not see so many of this noble fraternity patronising this part of the forest to-day.

Sugar, always an intriguing and exciting adventure, which seems to inspire the greatest uncertainty and anticipation, seems also to have lost its fascination for the younger hunters, and its attraction for the hunted. No longer does it seem necessary to erect warning notices forbidding the application of treacle to the tree trunks in the Forest rides without obtaining permission. The reason for these notices in the past was that the increasing number of entomologists sugaring in the rides left so many unsightly stains on the trunks to bear witness to their activities that it was considered to spoil the beauty of the Forest. Yet when glancing through my cabinets, I wonder how a collection could be acquired without the assistance of sugar, and memories are conjured up of hurried cycle rides to the Forest after my daily chores in the city, hastily daubing sugar on fence posts around a secluded paddock and, before the round was completed, finding the first post literally swarming with moths jostling over each other in greediness and mad frenzy to partake of the sweets prepared for them; *nigra*, *semibrunnea*, *socia*, *exsoleta*, *vetusta*, *ornithopus*, *helvola*, *aprilina*, *ligula*, wainscots of a second brood, *lutulentula*, *nupta*, the varied forms of *satellitica* and *vaccinii*, and on a couple of red letter days, a couple of *rubiginea*, and a host of other species, not forgetting a jaded *pronuba* still thrusting out its ever-seeking tongue to the sweets. Ah, but what sweets they were, of course; Fowlers' black treacle to which were added most religiously throughout the season any left-over sweets from the dining table, which were always thrown into

the "stink pot" as my family was accustomed to call it. This ceremony was often performed before anyone had had the chance to refuse a second helping on evenings propitious for bug-hunting. Regularly throughout the year, or, rather, throughout the fruit season, all fruit was gathered up and boiled and added to the mixture, and, finally, just before sugaring operations commenced, this aromatic concoction was laced with a liberal helping of home-made cider: no small wonder the evening smelt so good on such nights.

The revolution in collecting at light has nowadays reached the most fantastic proportions, and it is not really surprising that the more laborious methods of collecting are losing favour, more especially with those who have never practised these other methods. Since my initiation into the society of bug-hunters, it has been my boast that all forms of light attraction have been employed in the Forest in turn, oil lamps, acetylene, petrol and paraffin vapour, electric, including hand torches, car headlamps, and did somebody murmur mercury vapour? Yes, the lot! and by experience all have advantages and disadvantages, but, of course, mercury vapour has superseded them all. Oh, we must not forget the old fish-tail gas lamps from which very profitable collecting was done in the Salisbury area, where it caused a sensation when *musculosa* was taken very often from them and it may be a surprise to know that a couple of them taken by the late Harry Haynes from these lamps was exchanged for a handsome 36 drawer cabinet, a cabinet that was the envy of all his entomological friends. There is no doubt it will be a long time before anything else will be found to equal the powers of mercury vapour for attracting moths, but, really, it has undoubtedly taken the romance and joy from collecting, and more important, of course, it has relieved the entomologist of a considerable amount of hard work, but is it really satisfying to lie in bed and then examine the accumulation of moths in the morning, if there is time. Surely, it was the effort we expended on our excursions that made our collections really worth while, and, above all, we did most enthusiastically appreciate any good thing that chanced to come along, and it is remarkable what rarities were acquired by the old-fashioned methods. It is true there are many collectors to-day who would fail to register any excitement should *celerio* appear at their m.v. So utterly blasé have we become with the use of this all-powerfully attractive medium it is indeed doubtful whether some of them would even raise an eyebrow. There are many entomologists working to-day who almost expect to find a new species for the British list every time they go out with the lamp. No, there are neither the thrills nor the excitement; somehow there is something missing, and if you possess a mercury vapour lamp, you will certainly get whatever you have set out to obtain plus a few thousand other specimens, good and bad. It has often occurred to me to ask how one can find time to set the multitude of insects taken even on one night, particularly if one is working a new district where there will be so many species one is on the look out for: what happens, for instance, on a tour round a new part of the coast which will probably contain so many of one's desiderata. Surely these captures are not left in the relaxing jar, always a sore point with me, for so many specimens are never set after a period in the tin awaiting one's convenience. It really

used to be difficult enough to find time to set one's captures, meagre as they were by comparison, before the advent of pressure lamps, unless, of course, one had unlimited time for the purpose.

Returning to a more natural method of collecting, dusk has always had its appeal, and offers some extremely good sport, frequently calling for great dexterity with the net. Furthermore, there is a remarkably fine assortment of species to be obtained in this way during the season many of which are overlooked or completely missed by other means can be procured in the magic moments just before darkness sets in, for there are many insects that appear on the wing for a short spell during that brief hour after sunset.

Another very profitable and enjoyable (though at times laborious) source of collecting in the Forest used to be beating the leathery foliage of rhododendrons which seemed to be a favourite hiding place of the smaller geometers, though there was one historic day in my collecting career when a lovely and perfect *livornica* flopped out at my feet. In recent years the clumps of rhododendrons have been getting fewer, some have been destroyed in fires, while others have been cleared to assist with the reafforestation. Indeed it has just come to my notice that the Forest authorities are considering a poison to eradicate rhododendrons from areas where they are likely to be damaging the interests of forestry, a most revolting thought when we think of the blaze of colour imparted by this typically forest plant, and striking a more personal note, the times I have seen the bee hawks flitting from trumpet to trumpet, and after dark have heard the whirring wings of other hawk moths visiting the blossom so regularly.

It is indeed unfortunate that the increased activities of reafforestation have necessitated such drastic measures and it is very distressing that these far reaching measures have had to be carried out in areas where at long last they were showing signs of winning the battle against fires. No doubt the prevailing conditions in such areas offered favourable circumstances for the purpose of forestry, and lessened the task of the monstrous bulldozers and cultivators that churned over the surfaces of undulating forest before it was remodelled with row upon row of alien conifers arranged with military precision.

There is no doubt that entomological sanctuaries are no longer to be found in the Forest, or if they are, they are very few and far between, and it is in fact almost impossible to find a secluded base within the region. Everyone seems to possess a car, and at every opportunity they pour into the Forest rides and glades, parking on and over the verges, in and amongst the heather, regardless of the weather and in some cases the time of day or night, for many a rowdy bottle party has terminated, not always happily, in the Forest, where at the present time there are more motor cars than ponies, cars that are arriving laden with children who are scattered around deep in the heart of the Forest to be rounded up later and driven back to the towns leaving a trail of forest blossoms and heather behind them littering the highway. It would not surprise me in the least to see parking notices with a parking attendant standing alongside the notices that already exist with grave warnings and penalties if one is found feeding the Forest animals. Nearby are enormous litter bins, but they seem to be in the wrong place for the tired individuals who dine in the Forest and then



find it too fatiguing to walk the few yards necessary to enable them to deposit their paper, empty bottles and fruit tins in them, not forgetting the almost indestructable polythene wrappings. With all this we have the slovenly smoking habits of adolescents, and the irresponsible vagabonds who see no harm in casually lighting their camp fires. It is no small wonder that the true Romanies who were repeatedly blamed for unaccountable forest fires have packed up their chattles and hit the trail to find peace and solitude elsewhere. These were people with whom one might exchange a few pleasantries, often gaining interesting information in the process, or even a caterpillar or some other acceptable creature of the Forest, in fact it was from one of these swarthy wanderers that I received my first intimation of the existence of *pinastri* in the Forest, and there was another who magically produced a fine and perfect male *iris* that he had seen sitting around on his caravan. These good people have gone, so many of the wrongful accusations may now fall on the right shoulders.

With this continued invasion by unwelcome visitors to the Forest, we have seen fire towers springing up at strategic points and whisks of birch besoms put handy at convenient places as beaters to deal with the ever increasing fire outbreaks. There have been several attempts at draining certain boggy areas which, if not altogether successful for the purpose for which they were intended, have spoiled many marshes which were formerly favourite haunts for a few local Forest species, including the rich red form of *gracilis*, which attracted many entomologists to the Forest collecting the larvae from the tips of the bog myrtle growing in the swamps. Alas, that delightful little plusiid *uncula*, once so common, is now rarely seen in the places where it used to abound; even common insects on the adjacent heaths—*hippocastanaria*, *palumbaria*, *testata*, *porphyrea*, *nanata*, *pumilata*, *atomaria*, *pavonia* and a dozen others—which were so regularly kicked up almost at every step all seem to be very much rarer to-day, and some are not seen at all in places where they were formerly common.

It was during the early thirties that the Forest was honoured by the presence of the handsome and welcome pine hawk. So pleased was this species with the territory that it stayed on to form a colony, and it was quite common for a while but, like so many of the Forest lepidoptera, it is now becoming scarce. Another newcomer about the same time was the sawfly clearwing, *flaviventris*, which attracted so many collectors in the "even" years to collect the familiar swelling from the sawfly shoots, but dear me, what a lot went away with the wrong larvae, and found themselves with the coleopterous larva of *Saperda populnea* and how many also, although successful in finding the right galls, were dismayed at the large percentage of ichneumons bred. Now after a brief period in the Forest, it seems that this species has also passed its peak days, for its numbers are decreasing fast. Another clearwing which one could always rely on finding in the birch stumps was *culiciformis*; also *bembeciformis* in the willows, whose borings could be located well below the water line in situations where willows flourished; both these are now only rarely met with. At one particular spot could be found the only colony of *sphegiformis* known in my area, but alas, they have gone, probably for ever, for during the war the whole alder swamp was completely cleared, and *sphegiformis* has not returned since.

Memories of butterflies in the Forest are always vivid; Oh for the days when one could net a couple of dozen *paphia* in one sweep of the net, and see as many *valezina* basking on a small bramble. Oh for the rich years when extreme varieties of *paphia* were as common as *valezina* is to-day, when it was possible to stand at a crossing of two rides and, without moving more than half a dozen yards, collect a rich series with the possibility of *nigrina* among the freshly emerged *camilla* within a very short space of time, always with the possibility that an *iris* would descend into your territory. In the ever luxurious rides *hyperantus* of all forms, including the occasional *lanceolata*, and more often the lesser *arete* and *caeca* varieties of this sombre insect were dancing with hundreds of the typical form, all mingling with the rich and large forms of *jurtina* which one could but rarely meet with anywhere else.

Lovely fulvous and heavily spotted *tithonus* flitting from bramble to bramble lead us in a fairy-like manner further along the ride, eventually bringing us to large clearings where unlimited thistle heads are adorned with *cydippe* ever darting from one bloom to another, and in much smaller numbers and apparently lost, *aglaia* halting awhile for a quick refresher upon any untenanted thistle flower they may find. We have not seen it all yet; not by any means; as we wander back to our starting place through the rides, there are plenty of *T. quercus* which have descended from the oak trees with the sinking sun and are now sitting on the bracken in the waning evening light like jewels among the tawny *paphia* and *camilla*, whilst ever restless skippers dart here and there in a game of tag to end their day. Later on in the same rides, fresh *rhamni* sail past faded *paphia* and ragged *camilla*. Newly emerged commas, peacocks, and a few red admirals, and the now unfortunately missing large tortoiseshell which was such a regular inhabitant a few years ago, are all searching the now bedraggled bramble blossoms which are now few in number and faded in colour, lingering at the top of sprays already laden with ripening fruits which will replace the blossoms shortly as an attraction for the Forest butterflies by day and by night, the moths amongst which one may hope to find *helvola*.

What has happened to this galaxy of Forest butterflies? Such abundance has not been seen for very many years; where have they gone? It has frequently been said, with truth, that during the war enclosures in the Forest became very much overgrown with brambles, honeysuckle, and dense undergrowth; ideal conditions for forest lepidoptera, and an advantage they were not slow to appreciate. Rampant growth continued in spite of an attempt to stem it by an army of land girls who were unable to cope with the situation, largely due to the fact that they were much occupied by other and more important work in other parts of the Forest. When the war was finished, great improvements took place within the enclosures. Post-war labour was profuse and had to be employed; there was a lot of work to be done, and there was a renewed interest in forestry; vigorous clearing took place in the enclosures with such thoroughness that brambles were all but exterminated, honeysuckle burnt, all the undergrowth removed, and everything incinerated. Yes, these were drastic but necessary measures, but were most unfortunately disastrous for the lepidoptera of the enclosures, which suffered an irreparable decrease in numbers.

We must not forget, either, that there had been some extremely unfavourable summers in these recent years which also militated against those species which were struggling to increase their very precarious hold, especially after having experienced such meagre times in the past. There is no doubt that the vigorous clearing and burning of sallows in many parts of the Forest has been almost entirely responsible for the gravely reduced numbers of *iris* in the Forest to-day.

It is now only the satyrids that have maintained something like their normal status, although this may only apply to the species which live within the rides, for out on the heathlands *semele*, and even *pamphilus*, are nowhere as plentiful as formerly, but, surprisingly enough, there is a very marked increase in *ageria*, which although always regarded as a woodland species has changed its habits, and is freely met with along hedgerows and, at times, out on the open heath. Only too well do I recollect the days when, after the woodland species had gone to roost, it was possible to spend a lucrative evening in the valleys, armed with a pair of forceps inspecting *aegon* and *phlaeas* for varieties; so common were these two butterflies on the heath that it was like grass-stalking for blues on the not far distant chalk hills. *Itussula* was another very common insect that one constantly kicked up from the heath, but, like others, it has become increasingly scarce, and in some areas it is hardly seen now; it must be years since a clouded buff fell to my net. All this is very sad, indeed, but the situation is still deteriorating.

Happy were the days and nights, long past, when I set out laden with sugar tin and brush to paint fifty or more trees in a ride so dark, and with such a thick canopy overhead that one felt as though enveloped in a velvety shroud. Continuing onwards, for my special ride where I intend to sugar for *promissa* is still a long way ahead, I move cautiously and almost with trepidation when the awesome screams of a vixen reverbrate throughout the glade with such startling suddenness; alarming thoughts pass through the stunned mind sending chills down the spine, but one recovers from the momentary shock and, grasping the lantern firmly as though it were a friend, one presses on, and then one pauses to listen to a peculiar soft tapping, only to discover that it is the pattering of larval frass on the parched oak leaves, and dropping on to the crisp bracken below. A little later, the distant yelping of a dog fox is heard; he is seeking for his wandering mate who is now foraging somewhere in the depths of this fascinating if somewhat eerie wood. Farther on, and well into the wood, the intermittent and subdued grunting of a shuffling badger is heard prowling around, and ever suspicious and annoyed at the disturbance I have brought to this secluded wood.

For youthful entomologists who would venture into such a place, let him be warned by one who has experienced the feeling of fear, that the moment his heart begins to thump and his hair feels that it is frozen, it is time to pack up and return home without delay. Even if the cause of alarm has been located to the snuffing badger or hedgehog or the stuttering hoot of an owl, do not delay, for once your equilibrium has been upset the most innocent sounds in the forest will be amplified one thousand times into the most fantastic proportions and shapes. On one unforgettable night with a friend in search of *promissa* in this very wood,

for want of a better name, known as *promissa* drive, we had done the rounds methodically; after the first round there was nothing doing, as might have been expected, for *promissa* is a very late arrival at sugar, so my companion set out to do some investigating on his own, a very risky thing to do in the middle of the night in the depths of the Forest. He wandered away from the well worn rides, and it was not long before he had lost his bearings and himself. My glowing lamp was of no avail to help him find his way back to the sugaring ride, and for fear of wandering still farther into the eerie wood, he very sensibly laid himself down and slept until dawn. Any attempt at locating each other by shouting would have been but wasted effort, so muffled were the shouts by the density of the greenery. Fortunately, everything ended without further mishap, and our reunion was celebrated by drinking a flask of hot coffee, always a necessity on these night expeditions, but sweeter still was the thought that we each had half a dozen *promissa*, all of which were taken after I had given up all hope of finding my friend until daylight.

On yet another occasion, in company with my late friend A. G. Peyton and his wife, we were working the same sugaring round for the fascinating crimson underwings when another unforgettable experience befell us; it was quite alarming. We were inspecting a sugar patch by holding the Coleman lamp at a distance for fear of scaring off the quivering catocalids when our peace was disturbed by a hornet buzzing frantically round the lamp; it was promptly netted and duly despatched, only to be replaced by another and another, and the numbers of these unwelcome visitors increased until one, more curious than his fellows, thought it necessary to enter the open neck of my shirt. Pandemonium raged for a few minutes, during which my shirt was pulled off my back, regardless of the company, and the impudent insect was squashed unceremoniously in its folds. Fortunately for myself and my friends, and in fairness to the hornets, it must be said that no stings were drawn upon anyone. After this confusion, we continued our sugaring, but not before we had discovered that we had been standing with the lamp immediately below a hanging hornets' nest, suspended *in situ* beneath loose bark of a decaying oak.

As a compensation for this discomfiting experience, we had the good fortune to see many *promissa* that night, also one *sponsa*, a species that is much less common than it was in this area a few years ago, in fact it has become quite scarce. Other insects at the sugar included lots of the very variable *trapezina*, some *pyramidea*, *satellitica* and, of course, the ubiquitous *pronuba*, but little else. However, back on the heath, where we had left the car and a petrol lamp burning in the middle of a sheet, there was a goodly assortment of heathland moths sitting around and on the sheet, many of which would be very welcome to-day. Of the moths taken, the prize undoubtedly was a handsomely fresh *convolvuli*, quite a surprise for us all, also present were *neglecta*, *agathina*, *anomala*, *nupta*, and scores of other lesser fry, more especially the geometers of the heath. My friends were amazed that it was possible to leave the car so long unattended whilst we were away in the wood, without any interference, a proceeding which would probably result in serious consequences to-day.

As we are reminiscing upon the diversity of transformation we have already witnessed, and of which there is more in store for us, our thoughts longingly returned to those happy and carefree week-ends when, after leaving our business at mid-day on Saturdays, it was almost a regular custom to dash home for a hasty meal and mount our bicycles, which had been prepared overnight, and then pedal away to the unspoiled Forest for a collecting trip on any part of the Forest to which our fancy might lead us, sleeping when we felt the need of sleep in little improvised bivouacs, using our satchels for pillows. One night, hearing sounds under my satchel, I lifted it to discover a large grass snake coiled up and evidently enjoying the warmth emanating from my body. Later on, in the early hours, we were awakened in a most unusual manner, the disturbance being a stampede of forest ponies led by a formidable stallion whinnying, with distended nostrils. We were indeed lucky not to have been trampled on, but fortunately the waving of our fragile nets was enough to cause the horses to change course. This interruption suggested an early rising, and although it was only 4.30 a.m., we were rewarded, for there, sipping dew from a bracken leaf, sat a lovely golden yellow *miniata*, the only one known to me. Sauntering down the glistening rides at that hour, net in hand, it was quite a revelation to see so many moths on the wing, far more than we had seen the previous night, when we were expecting them; it was evidently the second flight one so frequently hears about, and misses year after year!

On these outings food was quite a secondary consideration; in any case there was little room to spare for carrying luxuries and we could be well satisfied with a couple of buns or a sandwich and a little fresh fruit. Carrying drink was always a problem, but we soon discovered where to obtain a supply of fresh spring water, and were able to dispense with that burden.

The ever fresh joy of those eternally happy week-ends in the Forest will remain with me for ever, and I will see again the Forest as it was before so many dubious developments caused such disfiguration, aided and abetted by the many fires of known and of unknown origin and by the ever increasing number of irresponsible people who have no sense of country lore, and no respect for the beauty of our wild countryside, who treat the Forest as though it were a dust bin or a race track. Before long it will be a hazardous undertaking to wander along a Forest road or right of way, for these are more and more being found out by roaring, spluttering internal combustion engines, belching out their poisonous fumes to contaminate the fresh Forest air, all seemingly in the greatest hurry to speed themselves into oblivion.

Such, alas, is the penalty of progress, and we are advancing towards a dawn when we will discover too late that civilisation has lost its significance.

When I set out to write these reminiscences it was my intention that they should be entirely entomological, but my fervent pen has become somewhat impulsive, but for all that, I have not let my imagination stray in the least, and it is hoped that these reminiscences, culled from nearly forty years of collecting in the Forest, will be regarded purely from the entomological angle as has been my intention. Further, it is also stressed that these experiences and adventures refer to conditions

that do prevail, and are still extant in a limited area of the northern part of the New Forest, and although my findings may well be at variance with those of observers in some other region, I would like it also to be known that I have not intended to draw any comparisons and I do not claim it to be a factual report of any part of the New Forest. Nevertheless, regretfully and undeniably, I am forced to the conclusion that at any rate this corner of the Forest is no longer an entomologist's paradise, for, like so many other havens of the past, it is no longer a place for seclusion or solitude.

Since writing this narrative, a further visit to the Forest has revealed, most disconcertingly, that a large area of the National Trust Forest has been subjected to the abuse of mechanical slashers and fires to assist in removing rhododendrons, gorse and heather, thus enabling the huge agricultural implements to convert yet another lost portion of the Forest into a plantation of more alien conifers, thus depriving us of more common rights which are our inheritance.

## Thoughts on Rearing *Diacrisia sannio* Linn.

By H. SYMES

In last November's *Record* (71: 268) there was a note from Mr. M. J. Leech stating that he had succeeded in rearing 41 *D. sannio* from the egg, of which 35 were females, and asking why there was a ratio of almost 6 to 1 of females to males. I cannot answer that one except by suggesting that, as this species very rarely produces a second brood in England (I have a specimen taken at Folkestone on 3rd September 1933, a hot summer), the larvae were reared in somewhat abnormal conditions, under which, as Kipling very nearly wrote, the female of the species is more lively than the male. But I think Mr. Leech's achievement was a remarkable one, for I have always regarded this species as very difficult to rear, judging both from my own experiences with it and from those of several entomological friends. It would have been interesting to hear some details of Mr. Leech's treatment of his larvae.

In the wild, the ratio between the sexes appears to be preponderantly in favour of the male. One seldom sees more than two or three females in a day, and sometimes not even one. The Rev. F. M. B. Carr, an entomologist of great experience, told me that only once had he seen a number of females on the wing, and that was in Delamere Forest, where he saw a flight of females without any males in attendance. Mr. A. C. R. Redgrave writes that although he has taken the male in a number of localities, he has never taken a female. Nor is it easy to find the larva. I have often searched for it in places where I knew the species to be plentiful, but have never found one. Mr. Carr tells me that he has only once found larvae, and that was by chance. It was in February, and they were hibernating in curled-up birch leaves, and were very small. He succeeded in rearing a number of moths.

A captured female lays very freely, and three times in the last thirty years I have had a quantity of eggs, but not once have I reared an imago, until my fourth attempt, last year. The larvae, which in

two cases I fed on dandelion, and in the other on broad-leaved plantain, as recommended in Tutt's *Practical Hints* (II: 97), started off all right, but nearly all died in their second instar, and none survived beyond their third. Last year, however, things went better. On 23rd June I took two females on a heath near Wareham, Dorset, and each of them laid a batch of eggs in a pill-box that afternoon. One of the moths, A, laid a much larger batch than the other, B. Both lots of eggs hatched on 2nd July, and the larvae proved to be very healthy.

By the end of the month, fourteen of brood A had gone right ahead and one of them changed into its last skin on 31st July, spinning up on 2nd August. None of brood B fed up rapidly like this. I had been feeding them mainly on dandelion, varied by a species of hawk-weed and some sprigs of heath (*Erica carnea*) to make them feel more at home: they sometimes rested on these and occasionally nibbled at them. I did not give them any groundsel until they were in their final instar, when they ate both leaves and flowers with avidity. My larvae did not look much like the illustrations in Buckler (*Larvae*, Vol. III, Plate xlv): they were much darker than Fig. 2a, and the marks along the white dorsal line were orange-coloured, and not bright red as in Fig. 2. Normally they were rather sluggish in their cages, but, when disturbed, they sometimes showed signs of annoyance, and then they showed an astonishing turn of speed. Mr. Percy Cue, to whom I gave eight larvae on 19th July, also noticed this, and told me he would back them to race any other species and win easily. I think that the larvae of *Spilosoma urticae* would give them a good run for their money. During the daytime, when not actually feeding, most of the larvae had a tendency to lurk among the debris at the bottom of the cage, but several of them, when nearly full grown, basked in the sun, higher up on the sides of their cage. Until they reached their final instar, they fed rather slowly. Five larvae spun up in a corner at the bottom of the cage on top of one another, an annoying habit common to many larvae. The cocoon is a very flimsy affair. On 18th August I noticed a pupa at the top of the confused mass of cocoons. In two or three instances, pupation took place on the third day after the larva spun up; these larvae had done so at the top of their cage. Of the fourteen larvae that had gone ahead, one died in its last instar, and one ceased feeding in its last instar, and died some time later. The last of the remaining twelve spun up on 21st August and pupated on the 23rd. At this date, about a dozen of each of the two broods were still alive, but they were only in their third instar and were feeding very slowly: some survived until the middle of September.

A female moth of normal size emerged on 29th August. It came up from the pupa I had noticed on 18th August, and it seemed to me that the pupal state had been of very short duration, but it was the same as that recorded by Mr. Leech. Up to this point, I was very well satisfied with my success, but unfortunately it ended here. As the days went by and no more moths appeared, it became increasingly evident that something had gone wrong with the pupae. I thought they must have got too dry during the exceptionally long hot spell in

August and September. I waited until 26th September before opening the pupae. Imagine my surprise and disgust when I found that the first pupa was full of maggots. I counted 52 of the revolting little beasts. I suspect that they must have been the larvae of *Pteromalus puparum*, a Chalcid wasp "that specialises in laying its eggs in pupae (I quote from Dr. A. D. Imms, *Insect Natural History*, p. 146) . . . The female will settle down beside a caterpillar that is about to pupate, it may be for several hours, and just wait until the event comes off. When transformation has taken place, she mounts the pupa and stabs her egg-laying tool into its vitals and deposits a number of eggs within". An egging habit.

Of the other ten pupae, six were full of maggots, two contained fully-formed moths, one of each sex, dead but not dried up, and the remaining two contained a squashy mess. As regards the parasites, I do not think the attack was made on the larvae, which were kept indoors until nearly full-fed, when they were moved to a garden shed, where they were more open to attack. How some fifty larvae found enough food in one pupa to complete their growth beats me, but some of them looked distinctly under-nourished. I kept a number for observation, and at the time of writing (28th January) they have not pupated, but are still alive, and look very much as they did last September. They can hardly be waiting to move off to another victim.

I have already mentioned that I gave eight larvae to Mr. Cue, and he was remarkably successful with them. They all fed up rapidly and he obtained seven moths, four ♂♂ and three ♀♀, of which the last came out on 5th September. This was such a striking proportion of success that I asked him how he had treated his larvae. He replied: "I fed them in roomy plastic boxes lined with porous paper, four to a box. I tried various foodplants, but in the end I gave them only young dandelion leaves, and this, I think, is the secret; I always put fresh heather at the bottom and the dandelion leaves I laid or stood on top of the heather to keep them well clear of the bottom . . . I think one must give larvae free access to the undersides of such food as dock, dandelion, plantain, etc., and heather at the bottom helps to do this. The dandelion stems I removed daily—all the larvae left was just the centre rib—the heather I often left for a week. I kept larvae and pupae indoors all the time". Well, nothing succeeds like success, and Mr. Cue may have solved the difficulty of how to treat larvae of *sannio* in captivity.

I sent a few larvae up to Yorkshire, and Mr. G. E. Hyde bred three females, and Mr. E. W. Smith one male. Brigadier Warry obtained eggs from a female he took at the same time and place as I took mine, and from this stock, one male was bred by Miss Pengilly.

## Invernessshire in 1959

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

The wretchedly wet collecting season of 1958 was followed by an equally remarkable winter, but for a very different reason, a serious lack of snow at the same time as an unusually prolonged period of con-



tinuous frost in late January and early February 1959. Due to the lack of adequate snow cover the frost penetrated the ground deeply enough to freeze all our village water pipes and deprive us of water for three weeks! The deep and long frost may well have had a lethal effect on the hibernating larvae such as *Eurois occulta* L. and *Polia hepatica* Cl. (*tincta* Hb.), which were again scarcer than usual this year. The long frost was also delightfully accompanied by a superb anti-cyclone giving cloudless blue skies and warm sunshine, so that the appearance of the usual spring species was not delayed as much as last year, with the exception of *Phigalia pedaria* Fab., which did not appear until 11th February, ice and snow still being on the roads! This species was unusually plentiful this year, emerging in large numbers on mild days all through February and early March; on 23rd February I found no less than six freshly emerged males on one post!

The first week of March brought the first hibernated Noctuids out, *Conistra vaccinii* L., together with the arrival of the first immigrant Plovers and Oystercatchers. A succession of fine, sunny days with night frosts resulted in slow but sure emergences of the usual early spring species, *Achlya flavicornis* L., *Colostygia multistrigaria* Haw., and the *Orthosias* all appearing on the 15th of the month, and *Brachionycha nubeculosa* Esp. as usual on the 31st. Numbers of individuals, however, of all these species, unlike *A. pedaria*, remained ominously small, but improved considerably in April, so much so that the year's record m.v. trap catch occurred on the 15th with 284 moths, but only 13 species, and 127 were *Orthosia gothica* L.! The seasonal dates were now about average and they remained so; the first *Chesias rufata* Fab. appeared on the 25th, and *Saturnia pavonia* L. was well out on the 27th April.

April ended and May began as almost every year with the usual "lambling" storm of heavy snow and bitter East wind, thereafter progressing normally with the emergence of *Callophrys rubi* L. and *Pieris napi* L. in good numbers, followed by *Anthocaris cardamines* L. and *Argynnis euphrosyne* L. in plenty on the 23rd May. A visit to the Great Glen and the area West of it on the 26th showed that *Carterocephalus palaemon* Pall. was well out in both sexes and in good heart. In this mild area species were naturally some two to three weeks ahead of Badenoch, evinced by the worn state of *A. euphrosyne* and many fresh *Argynnis selene* Schf. accompanied by *Eustrotia uncula* Cl. and even two males of *Diacrisia sannio* L. were flushed, the earliest date I have noted for this lovely moth. This day also was the occasion of an important record of great interest. Mr. P. Le Masurier most kindly presented me with the first rural melanic example of *Biston betularia* L. for northern Scotland of which I am aware; it was a male, apparently ab. *insularia* Th. Mieg. taken in his m.v. trap at Aviemore that morning. For some years I have been recording this species from Badenoch to supply Dr. H. B. D. Kettlewell with figures for his invaluable work on melanism in this and other species, and I had almost come to the conclusion that the local population was 100% *typica* form! By a remarkable coincidence I took a second even more remarkable melanic *B. betularia* on the 22nd June at m.v. light at Port Appin in Argyll. This moth, also a male, had very melanic forewings with

*typica* white hindwings, a most striking form. By the end of May in Badenoch all the usual late Spring and most of the early Summer species were well out in normal numbers, and one pleasant surprise was a quite unusual abundance of the larvae of *Trichiura crataegi* L. on the young birches; it was obviously having one of its infrequent good seasons also.

In June the Highland Summer continued much as usual, cool, cloudy and fairly dry, no sign of the glorious weather reported from the South until well into August, when at last a superb autumn developed. However, a few species were beginning to emerge earlier than usual, notably *Aricia agestis* Schf. ssp. *artaxerxes* Fab., which I found well out on the 12th, on which day also I saw the first *Vanessa atalanta* L., an obvious immigrant, which took full advantage of the later sunny months to breed very successfully and so gladden our eyes with its great numbers in the Autumn. From the 19th June we spent a most pleasant and interesting week at Port Appin with Mr. E. C. Pelham-Clinton, who showed us many of his Argyll specialities, including *Cleorodes lichenaria* Hufn. which was almost the most abundant Geometer, *Setina irrorella* L., and *Tholomiges turfosalis* Wocke, the two last named both being new to me. The next week we spent with Mr. J. L. Campbell on his delightful Isle of Canna. The weather was not kindly disposed, a very cold Northerly wind and much rain making collecting difficult, but among the many kindnesses of Mr. Campbell was a wonderful expedition to the Isle of Rhum, where the Nature Conservancy Warden, Mr. Wormell, and his lady entertained us royally. He took us to see the large colony of *Zygaena purpuralis* Brunnich and the weather relented for an hour at mid-day just long enough for us to watch an abundance of these interesting Burnets flying and mating. *Z. filipendulae* was also present though in much smaller numbers on the same ground!

Back in Badenoch in July the usual Summer species were fully out in normal numbers, but as always in cool Summers the range of species was wide; for example, *Hadena thalassina* Hufn. and *H. contigua* Schf. were still about and yet *Amathes xanthographa* Schf. was beginning to emerge as early as the 10th! The common migrants began to appear more commonly than usual, including *Pieris brassicae* L., *Plusia gamma* L., *Agrotis ypsilon* Hufn., and *Nomophila noctuella* Schf., but not a single rarity appeared! On the 7th, however, Mr. Noble discovered a new species for my local list, *Comacla senex* Hb., near Boat of Garten: this is most interesting for two reasons: it is the only Footman in Badenoch, and as far as I am aware is the most Northerly record for this species. This was followed on the 29th by another record: Mr. P. Le Masurier took a male *Hepialus sylvina* L. at m.v. light at Newtonmore in my presence; I hope this species will continue to establish itself and help to control the Bracken which is becoming a pest here! The month ended with a very wet spell of weather, and two *Hydraecia micacea* Esp. in the m.v. trap!

August continued the showery windy weather, but warmed up with some sunny days towards the end. Entomologically it was remarkable for two interesting phenomena: first, several collectors visiting the district recorded a very considerable number of *Actebia praecox* L. taken

in their m.v. traps over the whole area from Dalwhinnie to Aviemore, thus strengthening still further my conviction that this fine species is breeding all along the sandy river valleys; and secondly I had the great pleasure and surprise, after living here for nearly eight years, of discovering that *Tiliacea citrigo* L. is well established in at least two localities, Glen Feshie and Kingussie. This was a humbling as well as a delightful surprise! I first found it accidentally by m.v. light in Glen Feshie on 20th August while Mr. Le Masurier and I were renewing our efforts to discover *Atethmia xerampelina* Esp. in which we were again unsuccessful! Immediate energetic action with the sugaring brush on the leaves of the Lime trees soon produced considerable numbers of the handsome *T. citrigo*, a moth I had not seen for over forty years! The month ended with the appearance of a few *V. atalanta*, advance guard of the autumn invasion, and the unwelcome sight in my m.v. trap of another fat long-eared bat! I watched the behaviour of bats near my trap on several occasions, and the difference between this big species and the little Pipistrelle is most marked; whereas the latter always hunts to and fro at a height of about twenty feet above the trap, the big long-eared bat sweeps low around and over it, almost touching the vanes, and this habit clearly accounts for its presence occasionally in it.

From the first day of September our Summer really began, cloudless sunny days almost uninterrupted lasted until mid-October. The first light frost was on the 11th, and snow on the high tops on the 25th. Mid-September saw the beginning of a splendid invasion of *V. atalanta* when Newtonmore village gardens swarmed every day with literally scores of these beautiful butterflies on the Michaelmas Daisies. In one garden, for example, on a single patch of these flowers precisely fifteen feet long I counted twenty-six individuals! The numbers varied from day to day, undoubtedly due to departures for the South and further reinforcements from the North. The other common migrants *P. gamma*, *A. ipsilon*, and *N. noctuella* were all common during this period, and in September two normally single-brooded species, *Perizoma albulata* Schf. and *P. blandiata* Schf., both produced a specimen of a second brood for the first time in my experience.

As the snow covered the high tops on the 25th October, a fine fresh *Xylena exsoleta* L. sought hibernating refuge in the house, and this signalled the end of an average season, with no outstandingly interesting events but leaving, for once, pleasant memories of good collecting weather.

Nedaich, Newtonmore, Inverness-shire.

## Some Records of Lepidoptera from the North West, 1959

By Dr. NEVILLE L. BIRKETT

The following notes concern a few species of lepidoptera taken recently in the southern part of the Lake District. They are usually considered scarce species in the district and this provides the reason for the present note

*Plemyria bicolorata* Hufn. Though the late Dr. R. C. Lowther of Grange over Sands considered this species to be reasonably common in this district my own experience has been otherwise. I first came across it in fresh condition and flying freely at dusk in the Roudsea Wood Nature Reserve on 28th June. I also beat a specimen from alder in the Witherslack Hall Woods on 4th July. I have heard that other collectors in the district at this time came across the species and it may well be that the extraordinary summer conditions may well have contributed to this frequency of occurrence.

*Crambus margaritellus* Hubn. A single specimen of this moss- and moor-land Crambid came to m.v. light on Sandscale Warren, near Askam in Furness, on 25th July. The nearest typical habitat for it would be some two or three miles away on the mosses bordering the Duddon estuary. I have in past years occasionally taken it in my trap operated in the centre of Kendal so it would seem that perhaps the species is given to wandering.

*Acentropus niveus* Ol. This, of course, is a well-known inhabitant of marshes and fens so it may be of interest to record that males (only) were common to m.v. lights at Sandscale Warren on 26th July. Two nights previously I took a fully-winged female at light at Storrs Moss near Silverdale. This species does not seem to be at all common in this district and the late A. E. Wright has given a summary of records up to 1947 in *Ent. Rec.*, 59: 100. B. P. Beirne in his *British Pyralid and Plume Moths*, 1954, p. 73, states that the rudimentary winged females "... swim actively by means of their middle and hind legs which are furnished with long fringes of hairs". The fully-winged female noted above does not possess these fringes of hairs nor do two females I have from Southwold, Suffolk. I wonder if these fringes are developed only in the rudimentary winged females? Perhaps anyone who has bred this species in some numbers will be able to answer this question.

*Evergestis pallidata* Hufn. (*straminealis* Hubn.). I had the good fortune to take a specimen of this pretty pyralid at Sandscale Warren on 26th July. There appears to be only one other record from North Lancashire and that is a specimen taken at Grange over Sands by the late Dr. R. C. Lowther on 4th August 1949 (vide *Lancashire and Cheshire Fauna Report*, 29: 82). H. N. Michaelis in the *Annual Report and Proceedings of the Lancs. and Cheshire Entom. Soc.*, 1953/4, 1954/5, p. 56, also notes a specimen from Freshfield taken by the late G. de C. Fraser. B. P. Beirne (*l.c.*) does not suggest a dune habitat for this species, p. 135, "... marshy situations where there are bushes and plenty of full undergrowth, such as damp places in woods". It is perhaps interesting that Fraser's specimen from Freshfield was most likely taken in a sand-dune area. Perhaps the wet 'flashes' behind the fore-dunes give the necessary marshy conditions.

*Endothenia antiquana* Hubn. H. N. Michaelis at p. 58, *l.c.*, notes concerning this species, "Recent records suggest it is widespread but not plentiful in many parts of Lancashire and Cheshire". I took a single male at Storrs Moss, near Silverdale, at m.v. light on 5th July. The only other record I know of from north Lancashire is of a specimen taken by A. E. Wright at Grange over Sands on 26th July 1948.

*Paltodora cytisella* Curt. In an area where bracken is considered an unmitigated nuisance it is surprising that this species, which feeds on the plant, has not turned up before the specimen now recorded. While collecting with m.v. light in Roudsea Wood Nature Reserve on 28th June I took two specimens of this small Gelechiid. Stainton in his *Manual of Butterflies and Moths*, 2: 349, records the species from Manchester and Newcastle (presumably 'on-Tyne'), but apart from these mentions there seems to be no other record from north England.

*Mompha conturbatella* Hubn. A fine specimen of this handsome micro was taken in my light trap in Kendal on 4th July. I know of no other record from north Lancashire but Michaelis, *l.c.*, p. 62, notes that it is "... recorded from many places in Cheshire and south and west Lancashire".

3 Thorny Hills, Kendal. 9.ii.1960.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

EVERGESTIS EXTIMALIS SCOP.: Mr. Wakely's very interesting note on this moth (*antea*, p. 17) shows how every year insects are colonising fresh districts, in many cases, I hope, permanently. The locality he mentions by the side of the old canal was a favourite one of mine until 1909. The canal, then in use for occasional barges, formerly connected Gravesend with Strood, but the owners were bought out by the South Eastern Railway Co. many years before I was born, and it was filled up from Higham to Strood, and the railway line laid upon its old bed. The works where Mr. Wakely and his friends met such a gloomy reception were then run by a firm called The British Uralite Co. which made fireproof roofing, etc. The waste ground adjoining was full of insects, more especially micros, including *Loxostege palealis* Schiff., *Homoeosoma sinuella* Fabr., *H. saxicola* Vaugh., *H. cretacella* Rossl., and *Oidaematophorus lienigianus* Zell. beside several of the weed-feeding *Phaloniae*, such as *P. dubitana* Hübn. There were certainly no specimens of *extimalis* to be found there in those days, although that particular light patch of soil was very well suited to it. *E. extimalis* and also *L. stictalis* Linn. are undoubtedly both migrants to this country in small numbers. In the Brecks, where both are permanent residents, they have found the ideal terrain; elsewhere they do not seem to establish themselves. I took *extimalis* near Sandwich in 1906, and near Standon, Herts., in 1914, the latter capture (an isolated insect) was probably one of a small colony, as it was very late in the year and in poor condition. It must be remembered that *extimalis* is not a very easy insect to collect in the day-time excepting on a sunny day, when it is easy to disturb, although it flies freely in the evenings so that before m.v. days these casual immigrants were no doubt often overlooked, *Palealis* was established for a long period of years in the locality mentioned, and also between Gravesend and Thong on some old field paths. It will be interesting to see whether the *extimalis* colony becomes permanent.

The canal in those days was full of eels, mostly about one foot long, and I often took an old rod and caught a dozen or so just by the

railway bridge; very occasionally a shoal of flounders came up the canal and gave good sport; a friend of mine once caught a grey mullet. Opposite the works, by the towpath, was a row of pollard willows where tree sparrows bred annually.

*CRAMBUS CHRYSONUCHELLUS* SCOP.: I have recently been trying to check records of insects supposedly confined to certain soils, and it is amazing how seldom these ideas have much validity. *Chrysonuchellus* is usually believed to be an insect of chalk downs and sandhills, but before the war there was a very large colony on two grass fields on Hadleigh downs near Leigh-on-Sea. These fields were both ploughed during the war; they were the heaviest clay, and some distance from the sea, with no sand of any sort nearer than Shoebury. An odd specimen may still be seen round their edges. I shall be glad to hear of records from areas other than chalk or sand.

65 Eastwood Boulevard, Westcliff-on-Sea. 27.i.1960.

## Notes on Orthoptera in S.E. England in 1959

By J. F. BURTON

My observations this year began on 21st June when I visited Blackheath in S.E. London to search for nymphs of the melanic form of *Chorthippus brunneus* (Thunb.). The normal pale-coloured nymphs were very common, especially in tall grass in sheltered spots, but melanic nymphs were scarce. On 23rd June, I again visited this locality during the evening, a fine and sunny one, and found that there had been a heath fire earlier in the day. Much of the unburnt grass was dry and yellow and the surviving *brunneus* nymphs were concentrated in these patches. The pale, sandy nymphs, the dominant form, harmonized perfectly with the colour of the dry grass. On investigating an unburnt patch where the grass was short and sparsely distributed, and the black earth conspicuous, I discovered five nymphs of the melanic form, one of which was in the last instar. In this situation they matched their background very well. I did not find a single melanic individual in the more grassy parts. The untidy silken web tunnels of Wolf Spiders (*Lycosa* sp.) were common and must account for many grasshopper nymphs. I saw one leap into a web, whereupon it was quickly seized by the web's owner.

On 4th July I found a large colony of *C. brunneus* on an unbuilt-on section of the Blackheath pebble-beds in the built-up district of Charlton in S.E. London. This colony had a high proportion of melanic and dark forms, especially where the grass was rather sparse. The temperature was around 90° F. and the males were in full "song". I paid further visits to this locality on 10th and 19th July to search for melanic individuals. These appear to occur in the ratio of 1:20 here and in neighbouring localities. Natural selection may be operating in favour of these melanic individuals in such polluted industrial districts of London (see Burton, 1959) and it will be interesting to see if the proportion of them in the population increases in future years. So far, I have noted melanic and semi-melanic forms at Blackheath, Charlton, Plumstead Marshes, Abbey Wood Marshes, and Stone Marshes, near Dartford, Kent.

During July, I released a number of adult *C. brunneus* in my garden at Charlton where they were formerly absent. They were all released in the same part of the garden, but it was interesting to observe how the different colour forms selected the habitat which matched their coloration best of all. Thus the pale forms were found mostly on the part of the lawn where the grass was dead (the greater part as a result of the hot, dry summer), the dusky or melanic forms among tall plants on the bare soil of the flower-beds and the greenish forms in a shady patch where the grass was still green. The last area was also inhabited by two *Chorthippus parallelus* (Zett.) (green form) which I released at the same time. Two green-coloured *Myrmeleotettix maculatus* (Thunb.), which I got from Box Hill, Surrey, on 5th July, resorted to an edge of the lawn where the grass was very short, but still remained green. In this situation they were extremely difficult to see unless disturbed.

*Tettigonia viridissima* L. attracted my attention a great deal during the summer and I made several trips to Plumstead Marshes, near Woolwich, where it is common, to study it *in situ*. On 19th July, from 8 p.m. B.S.T. onwards, many were heard stridulating and I collected six males from reeds (*Phragmites*). They were seen stridulating in all positions on the reeds—horizontally, head-upwards and head-downwards. Sims (1945) regarded the latter as the usual position. When I left at 10.30 p.m. B.S.T., many were still stridulating, although the peak appeared to have been around 9 p.m. My next visit to this locality was on 22nd August in company with Dr. D. R. Ragge, Major Maxwell Knight, J. H. Boswall and R. Wade to make recordings for a B.B.C. programme on grasshoppers. Following a fine, sunny day it became overcast soon after we arrived at 5 p.m. and a thunderstorm threatened but did not materialize on the marshes. Under these conditions only a few *viridissima* were heard stridulating at dusk. Previously a considerable amount of stridulation was heard from *Metrioptera roeseli* (Hagen), which is also common here. Next evening, a fine warm one, stridulation from *viridissima* was in evidence everywhere on the Plumstead Marshes. I was attracted to a tall wild parsnip, *Pastinaca sativa*, by one stridulating male and found a female there too. The voice of one of the males I collected on this occasion was recorded on tape a few days later by Dr. D. R. Ragge and is now in the B.B.C.'s gramophone record collection.

At Dartford and Stone Marshes, Kent, on 29th August, I found *M. roeseli* numerous in lush pasture and long grass bordering tracks and paths. *C. brunneus* and *C. albomarginatus* (Geer) were both common—the former on the river-walls and drier, rough ground and the latter in the marsh pasture.

Earlier that month (6th-11th August) I stayed at Marsh Court, near Stockbridge, Hampshire, which is situated on a low ridge of chalk (c. 250 ft.) whose eastern slope overlooks the River Test. On this slope with its characteristic chalk plants I found *Omocestus viridulus* (L.) and *Chorthippus parallelus* very common, and *Stenobothrus lineatus* (Panz.) quite frequent. The weather was mainly hot and sunny during my stay and the males of all three species were stridulating well. *O. viridulus* and *C. parallelus* were also very common in the water meadows around Stockbridge from Marsh Court to Longstock. On 7th August I made an excursion to the New Forest and in a small bog near Lyndhurst succeeded in finding a few *Stethophyma grossum* (L.). *Metrioptera*

*brachyptera* (L.) was also common in this bog and others visited. *C. parallelus* and *O. viridulus* were common everywhere in suitable habitats and I encountered *Myrmeleotettix maculatus* in numbers around the Hatchet Pond on Beaulieu Heath. On the way to Studland Heath, Dorset, on 11th August, I stopped at Corfe Castle for lunch in the hope of finding *Decticus verrucivorus* (L.), but heavy rain within minutes of my arrival stopped the numerous *Pholidoptera griseoptera* (Geer), *O. viridulus* and *C. parallelus* from stridulating and ruined my chances of finding *verrucivorus*. The rain also caused me to abandon my visit to Studland.

On 3rd September, I moved from London to a new house at East Grinstead, Sussex, and was delighted to find *Omocestus viridulus* present in the garden and *P. griseoptera* on the bramble-strewn banks of the lane behind.

On 6th September, yet another hot, sunny day, I led an entomological field-meeting of the London Natural History Society to the North Kent marshes around High Halstow. On passing through High Halstow village we were attracted to a small field, which served as a children's playground, by the stridulation of *M. roeseli*. This species proved to be numerous in the tall grass there in association with *C. brunneus*. The latter species was also very common in the short grass on the slopes in the neighbourhood of Northward Hill woods. Yellowish-brown and dusky-brown forms predominated. In the longer grass bordering the woods, *C. parallelus* replaced *brunneus*, whereas in the marsh pasture, *parallelus* was replaced in turn by *C. albomarginatus*, mostly dull green or straw-coloured forms. *M. roeseli* was frequent in long grass bordering the track from Decoy Farm to Egypt Bay, and also on a bank overgrown with Sea Couch-grass (*Agropyron pungens*) on the saltings in the bay. Here it was found in association with *Conocephalus dorsalis* (Latr.), which was also present along the sea-walls, and *C. albomarginatus*. Two *C. dorsalis* were found on Sea Purslane (*Atriplex portulacoides*).

Owing to the sound made by the stiff south-east breeze on the marshes I was unable to hear *C. dorsalis* stridulating, but I brought four (2 ♂♂ + 2 ♀♀) home with me and kept them alive in a dry aquarium tank in the garden until the end of September. Both males stridulated continuously on hot, sunny days for periods varying from 10 seconds to 2 minutes 20 seconds without a break. One male regularly stridulated for 30 minutes at a time, punctuated only by short pauses. The sound was a continuous low-pitched, thin reeling note, rather like a steady breeze blowing through reeds or rushes. It varied in speed and intensity, reaching a maximum every five seconds. As the speed varied the tegmina could be seen vibrating accordingly. I could hear the sound through the gauze top of the aquarium up to 10 yards away on a still day. In the presence of a female the males stridulated very excitedly, moving their antennae rapidly and often touching those of the female. I frequently saw both sexes nibbling at grass stems in the usual way and never in the manner described by Sims (1945). Both females oviposited in grass stems exactly as described by Sims for his captive *dorsalis*.

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28 Campbell Crescent, East Grinstead, Sussex.

## Some Chironomidae (Dipt.) taken in the Winter at Robertsbridge, Sussex

By P. ROPER

*Metriocnemus* (*Gymnometriocnemus*) *brumalis* Edw. Three females taken 23rd December 1959, one male and one female on 3rd January 1960, and seven males on 11th January 1960. All the four females were caught individually, two in one wood and two in another. No males were seen until two weeks later and then no females were in evidence. The females flew singly from cover to cover and the males were found in a small compact swarm on the edge of one of the woods. As in *Trichocera annulata* Mg., which were flying as a small swarm in an unusual position only some six inches from the ground and almost inside a bramble patch, they were well protected from the elements by the bramble and were very close to the ground. Both the woods in which the species was found contain small, shallow, stagnant ponds.

*Brillia modesta* Mg. The species was common up until the very cold weather. I found it in large swarms five to seven feet from the ground and always close to swift running streams of spring water. Also an undetermined Mycetophilid invariably seemed to accompany it.

*Hydrobaenus* (*Diplocladius*) *cultriger* Edw. This species was found in two places, both with small waterfalls close by. Four males and a female were taken on 5th January 1960, being netted as nearby foliage was disturbed, sending them out. Two males were taken on 17th January when there was still a considerable amount of snow on the ground. One male was gyrating lazily on its own beside a bush.

*H.* (*Orthocladius*) *piger* Goet. Five males were obtained early one frosty morning, 6th January 1960, when the grass was still white with rime. Two males were skulking in the dead reeds by the river and the rest were swarming lazily some seven to eight feet above the ground in a lane between high sheltering hedges but no more than 50 yards from the river.

*H.* (*Limnophyes*) *prolongatus* Kieff. A swarm of this species was seen in a sheltered place by the river.

*H.* (*Smittia*) *aterrimus* Mg. Extremely common everywhere, especially in vast continuous swarms along hedges and to a lesser degree in lanes. There are always a number flying around the garden and walls of the house but not swarming. Both sexes have been swept in almost equal numbers from the dead stems of stinging nettles during the very cold weather.

*Tanytarsus* (*Micropsectra*) *brunnipes* Zett. Three males and a female were taken on 29th January beside a small swift-flowing woodland stream, much beloved of *Brillia modesta* and *Tanytarsus subviridis*, both these, species especially the former, were abundant at the time.

It was a sunny day with a cold wind. One of the specimens was teneral and as I had worked this locality several times in the past few weeks and had not seen *brunnipes*, I suspect this was a fresh emergence.

*T. (M.) atrofasciatus* Kieff. Two males taken on 29th January out of several more seen in the same position and circumstances as given for *brunnipes*.

*T. (M.) subviridis* Goet. This species was quite common in January and met with everywhere near water, but usually only in ones and twos. I have seen a small swarm of four males about five feet from the ground in the shelter of a hedge.

31.i.1960.

## Notes and Observations

*OTIORRHYNCHUS RUGOSOSTRIATUS* GOEZE (COL. CURCULIONIDAE) IN KENT.—During August until October 1957, 1958 and in August 1959, I have taken at West Wickham eight specimens of this weevil. Mr. A. A. Allen informs me that the beetle has only occurred to him singly, and is by no means frequent. The interesting thing about my specimens is that they were all found inside the upstairs rooms of my house. They occurred mostly at night and were usually on the ceilings. Possibly they originated from the attic.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent.

*GONEPTERYX RHAMNI* LINN. SUSPECTED OF MIGRATING.—This butterfly is sometimes seen far away from its breeding grounds and is undoubtedly inclined to stray, particularly after hibernation.

It may be of interest to put on record that I saw a male *ramni* flying rapidly in a fixed direction over some salt marshes near Higham, Kent, on the afternoon of 9th August 1959. The time was about 3 p.m., and its flight was in a northerly direction, that is, towards the Essex coast. The weather was warm and muggy, wind very slight, no sun.

The only reference that I can find regarding migration in this species is in Dr. E. B. Ford's *Butterflies* at page 153, where he states that a number of *ramni* were seen migrating near Tavistock, but gives no further details.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent.

THE FOODPLANT OF *TILIACEA AURAGO* SCHIFF.—In reference to Mr. J. H. Johnson's note on this moth in Derbyshire, it would be interesting to know whether there is any field maple in the Chesterfield area. *Aurago* is common here; on a good night in September or early October, there are usually at least half a dozen in my trap, but there are no beeches whatever in the district except for a planted hedge nearly two miles away. South says the larva may be found on maple, where this occurs round beech woods, but here it is common on the maples in a hedge on the opposite side of the road to my garden. It may be as well to add that Whittle and Conquest both took the moth here regularly nearly fifty years ago, and the beech hedge I mentioned has been planted since the war. Burrows also took it regularly at Mucking where there were no beeches whatsoever.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 27.i.1960.

**TILIACEA AURAGO SCHIFF.** I was interested in the report by Mr. J. H. Johnson of the presence of *Tiliacea aurago* Schiff. in Derbyshire, but somewhat puzzled by his assumption that there is a relationship between the scarcity of this moth and the absence of beech woods. *Fagus sylvatica* is, I believe, not necessary for the survival of this species in an area, and last autumn I took the moth commonly on ivy bloom in a situation in Warwickshire where there was no beech. The hedges, however, had their fair share of *Acer campestre*. It may be that there is no maple in Derbyshire either.—F. A. NOBLE, F.R.E.S., 2 Newton Road, Sparkhill, Birmingham 11. 7.ii.1960.

**LYCAENA PHLAEAS LINN. AND OTHER SPECIES IN BERKSHIRE.**—As a result of the dry summer, there was a large third brood of *Lycaena phlaeas* Linn., and in September it was abundant on the michaelmas daisies in my garden here. On 30th September I was pleased to find among them a male of the silvery form, ab. *schmidtii*.

On 13th October I found in my light-trap an insect which, at first glance, I thought was a very late, possibly third brood, specimen of *Cosymbia porata* Fabr.; a second glance, however, showed it to be *C. pupillaria* Hübn. ♂. Mr. Goodson of the British Museum at Tring has kindly confirmed the identity. Apart from those taken in the Scilly Isles, or bred from their eggs in captivity, I wonder how many records of the capture of this insect exist.—Sir R. SAUNDBY, Oxleas, Burghclere, near Newbury, Berks. 21.xii.1959.

**EVERGESTIS EXTIMALIS SCOP. IN HAMPSHIRE.**—Further to the note on *Evergestis extimalis* Scop. (*antea*, p. 17), it may be of interest to record that this species has come to light here every year since I began to collect the Pyrales in 1955. This year produced four between 14th June and 10th July, which is about the usual date. There is a marked preponderance of females. Other micros of interest taken this year and not hitherto recorded have included one *Pammene aurantiana* Staud. and three *Myelois cirrigerella* Zinck. The latter record goes a long way to support the contention that this species is commoner in a hot summer. I also took my first specimen in over thirty years of *Eremobia ochroleuca* Esp.; why is this insect so scarce here? I would have thought the conditions were ideal.—DENZIL W. H. FENNELL, Martyr Worthy Place, near Winchester, Hants. 6.ii.1960.

**HADENA COMPTA SCHIFF. AT DUNGENESS: A BELATED RECORD.**—Among a series of *Hadena conspersa* Esp. taken by m.v. light at Dungeness on 28th June 1955, I have recently discovered that one specimen which I had uncritically assumed to be a small form of that species is, in fact, *H. compta* Schiff. I have been unable to find any other record of this insect from Dungeness, and Mr. Youden informs me that as far as he is aware, *compta* has not previously been recorded west of Folkestone. Being essentially a garden insect, apparently not feeding on *Silene*, it seems not unlikely that it may have been transferred with Sweet Williams from the Dover district.—C. R. HAXBY, 4 Windermere Terrace, Bradford 7. 19.ii.1960.

*ACHERONTIA ATROPOS* L. IN GLOUCESTERSHIRE.—I should like to record that an almost fully fed larva and six pupae of *A. atropos* L. were found at Haresfield near Gloucester. The larva was found feeding on potato in May, and a pupa at the end of August. The latter produced a perfect male imago on 19th October 1959. In another field less than two miles away, one pupa was found on 15th October, three on the 17th, and one on 4th November. These produced a deformed female on 30th October and a perfect male on 10th November. That found on 4th November produced a deformed female on 21st November. Two pupae split and failed to hatch. Mr. M. L. Ridgway ran his m.v. trap in the field for a fortnight and Mr. A. C. R. Redgrave his portable m.v. light on 23rd October, but no moths were taken. The pupa from which the moth emerged on 19th October was "forced" on a mantle-piece in a warm room. The remainder were kept under normal conditions.—D. J. ILES, 55A Reservoir Road, Gloucester. 16.ii.1960.

*HYDRAECIA HUCHERARDI* MABILLE: AN OLD FRENCH RECORD. — In looking through some old numbers of the Belgian journal "Lambillionea", I was surprised to come across in the volume for 1935 a plate containing the excellent photograph of two specimens of this insect described as *Hydroecia osseola* Stgr. (1882) subsp. *hucherardi* Mabille (1907). They were taken at Royan, Charente-Inférieure, on 12th and 14th September 1934. The notice goes on to thank Monsieur Braun of the local Natural History Society for allowing the reproduction by photograph of the "fine and rare species". In looking through the many articles written on the occurrence of *hucherardi* in the British Isles in recent years, I cannot find any reference to the above record which may well indicate that the species is well established in suitable localities all up the west coast of France.—C. G. M. DE WORMS, Three Oaks, Woking. 19.ii.1960.

UNUSUAL BEHAVIOUR OF *LIMNOPHORA* SPP. (DIPT., MUSCIDAE).—Whilst collecting at Failand, near Bristol, N. Somerset, I found that males of *Limnophora maculosa* Mg. were very numerous on 23rd August 1959, adopting the typical resting position on light-coloured stones. This was on a path running adjacent to a stream in a spinney, but further upstream, where the ground became more marshy and where I was forced to walk up through the centre of the stream, I found that the flies were resting on fallen logs that lay in or across the stream. Here I observed that wherever there was a male on a log, there was also present a much smaller fly that would gyrate rapidly in circles above the *Limnophora*, finally to settle a few inches from it, and then repeat the performance. Thinking that these, despite their smaller size, might be the females and that this might be part of their mating procedure, I secured several specimens, which I observed to have the eyes widely separated on the frons, supporting my notion that they were females. However, subsequent examination, by Mr. E. C. M. d'A. Fonseca, proved that these smaller flies were not female *Limnophora maculosa* but male *Pseudolimnophora triangula* Fall. This kind of behaviour seems most unusual between two species, but is presumably akin to the antics of male butterflies that are sometimes seen indulging in playful

encounters, though in this case the *L. maculosa* remained motionless and seemed oblivious of the attentions of the *P. triangula*.—ADRIAN C. PONT. 16.ii.60.

THE HABITS OF *AZELIA MACQUARTI* STAEG. (DIPT., MUSCIDAE).—On 29th April 1959, whilst collecting at Leigh Woods, near Bristol, N. Somerset, I observed numerous flies hovering and darting in the manner of *Fannia* and *Hydrotaea* males, in the shafts of sunlight filtering through the trees. Many individuals were present, but as their 'beat' was some eight to ten feet above the ground, I only secured one specimen, a male *Azelia macquarti* Staeg.

About an hour later, some fifty yards away from this spot, I came across a heap of brown, wet and thoroughly rotten grass cuttings, from which a swarm of flies arose at my approach. However, a second more cautious approach and a quick sweep of the net secured a representative sample of those present; all proved to be *Azelia macquarti* Staeg., and I had in the net nineteen males and fifteen females.

The species is undoubtedly the commonest of this genus, but this particular abundance in two completely different habitats was most striking.—ADRIAN C. PONT. 16.ii.60

BRITISH ENTOMOLOGISTS AND THE BRITISH FAUNA.—I am very much obliged to Mr. Huggins for the very interesting information on the study of the biology of *Abraxas grossulariata* Linn. in Great Britain (January, p. 19).

That I chose to make mention of *grossulariata* in my note (November 1959, p. 269) was a mere coincidence, but that I unfortunately hit a species which Mr. Huggins supposes to be fully studied, will not influence the idea of my note, and that Mr. Huggins can not grasp "What I was driving at" is no wonder to me as his comments deplorably demonstrate to me that he, himself, is one of the fathers, "developed in smog".

I do not doubt, however, that young modern English entomologists, who may have a broader idea of lepidopterology and its proportions, will understand to read both notes the right way.

To avoid further mistakes, I want to say that I naturally know that England has many eminent entomologists, of whom I personally know some, but to whom my note just as naturally has no reference, and further I want to add that my note was not a criticism of English entomology in general, as I am a great friend of England. I even appreciate Mr. Huggins very much from the reading of his monthly notes on the Micros, from which I learn a lot though I am an old boy in lepidopterology.

If Mr. Huggins should like to discuss the subject, of which I have a lot to say, I shall prefer that we do it in privacy and not use the costly pages of the *Record*, which ought to be used for more important subjects, for our private controversy.

The poor "spotted seal", which absorbs Mr. Huggins so much, is the very common one, which I also think is spotted in England, namely: *Phoca vitulina* Linn.—A. G. CARLSFELD-KRAUSÉ, 97 Slotsherrens-Have, Copenhagen-Vanløse.

## Current Literature

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS, VOL. VII, PT. 2  
ICHNEUMONIDAE (A 1), 116 pp. By J. F. PERKINS. ROY. ENT.  
SOC., LONDON. 1959. 25s.

This is the first part of a major taxonomic study of what is probably not only the largest but also the most neglected and taxonomically difficult family of insects in the British Isles. Difficulties arise not only in nomenclature, especially at the generic level, but through the frequent convergence of structural form in otherwise disparate genera. In addition, variation in many minor characters, the common occurrence of malformed specimens, the need for adequate series to discriminate between similar species and the necessity for microscopic examination of certain characters even for subfamily separation, combine together to make the *Ichneumonidae* a formidable group even for the specialist. The author discusses all difficulties as they arise in simple language and takes the reader fully into his confidence. The keys are clearly worded but necessarily complex in many instances. The illustrations maintain the high standards of this series of handbooks but the differences depicted are frequently discouragingly minute.

The author confines biological observations to a few brief comments in the introductory paragraphs to each genus and actual host insects are named in only a few instances. Similarly the species distribution is described in deliberately vague terms such as 'infrequent', 'rather uncommon', etc. The reason for this is, on the one hand, the imprecise nature of the available information through faulty or unchecked determinations of bred material, and on the other the tendency for these parasites to fluctuate in numbers from season to season according to the relative prevalence of their host species. Moreover the author suggests that records really reflect the distribution of collectors rather than that of the insects. It is to be hoped, however, that when the present monumental handbook is complete in all its parts, the author will marry together the available information on biology, larval characters, host relationships and taxonomy in one comprehensive monograph. In the meantime we are greatly indebted to Dr. Perkins for a valuable and long needed standard work on a difficult, economically important and rather neglected group.—C. A. C.

## Current Notes

RADIOACTIVE MIGRANTS—A REQUEST.—Recently in the course of population studies on the Lepidoptera, we have shown that when larvae are fed for 24 hours only on radioactive plants grown in water culture and then released, the imagines can be subsequently recognised when caught two or three months later. We have used Phosphorus-32 for insects with a rapid metamorphosis and Sulphur-35 for those with a longer one. Because of the increased surface area of the imago compared to that of the cylindrical-shaped larva, the radioactive counts are often 2-6 times greater in the imago than they were in the larva. The Lepidoptera are in fact extremely satisfactory material for labelling with radioactive isotopes.

Following the recent atomic explosion in North Africa, it is likely that large areas will have been contaminated with radioactive fall-out. Although this will not contain Phosphorus-32 or Sulphur-35, long-life isotopes such as Strontium-90 (half-life 21.6 years) and Caesium-134 (half-life 1.7 years) may have been produced. Food plants may have been contaminated and almost certainly this will eventually get into the plants by way of the roots. It is almost certain then that radioactive Lepidoptera will be hatching in parts of North Africa this year.

For some time there has been speculation as to whether the primary migrants arrive in this country direct from North Africa or whether they are their descendants which have bred further north. It seems now that we might have an opportunity of finding out.

Would anyone please be so good as to send me samples (dead, dry and unset) of the following species which have been taken during a migration this spring or summer:—

<i>Vanessa cardui</i> L.	<i>Colias croceus</i> Fourc.
<i>Macroglossum stellatarum</i> L.	<i>Plusia gamma</i> L.
<i>Heliothis peltigera</i> Schf.	<i>Nomophila noctuella</i> Schiff.
<i>Rhodometra sacraia</i> L.	

or any other migrant which could have bred in North Africa. Set specimens will be returned, if requested, after scanning by Geiger counter.—Dr. H. B. D. KETLEWELL, Genetics Laboratory, Department of Zoology, University of Oxford. February 1960.

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A POSTGRADUATE DIPLOMA COURSE IN CONSERVATION.—Difficulties are being met in filling needs for highly trained men and women able to deal with problems of animal populations, vegetation and land use, both in Britain and overseas. In Africa, for example, there is no one qualified to fill certain key posts now vacant and this is endangering the future of African wild-life and natural resources. To meet this need a one-year diploma course has been initiated at University College, London.

The course includes field work beginning in July, and lectures and associated practical work on conservation, physical geography, plant ecology, animal ecology, soils and land utilisation.

The course is run in the Botany Department (Professor D. Lewis, F.R.S.) in collaboration with the departments of Geography, Zoology and Town Planning and the Nature Conservancy. The Nature Conservancy consider this course suitable for the award of a training grant in conservation.

Application for admission to the course should be made (before 21st March 1960) on the Form of Admission of Postgraduate Students, obtainable from the Registrar, University College, Gower Street, London, W.C.1.

Candidates who are interested in obtaining a grant from the Nature Conservancy for this course should apply to the Nature Conservancy, 19 Belgrave Square, London, S.W.1., by 1st April 1960.

---

#### A DIPLOMA COURSE IN CONSERVATION

The Nature Conservancy have long been aware of the need for facilities for comprehensive training in ecology and conservation and are pleased to co-operate with University College London which is pro-

viding a training course starting in July 1960. The course is intended to lead to a College Diploma in Conservation Studies and the work will be entirely postgraduate.

Candidates will be selected from persons with a suitable degree in a relevant subject and special consideration will be given to those having a subsidiary subject increasing their suitability for the wide field covered by the course. Each course will last one year, beginning in July. Tutorial instruction in lectures and seminars will be given by members of the College staff from the departments of Botany, Zoology and Geography, assisted by selected external specialists. Facilities for field work will be provided by the Nature Conservancy on Nature Reserves and at their Field and Research Stations, where students will spend several weeks gaining general field experience by participating in field experiments and by working on individual problems under specialised supervision.

The final examination will consist of three papers and, in addition, satisfactory evidence must be given of adequate instruction having been received in the field. Candidates will also be required to submit a dissertation embodying the results of some specific investigation related to conservation.

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##### 4. *Animal Ecology*

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Land classification. The origins of the present cultural landscape. Competition for land; optimum, multiple and exclusive use. Effects of land utilisation on soils. Cartographic and statistical sources. Distribution and exploitation of economic minerals.

*Application to University College, London, for Admission to Course*

Application for admission to the course should be made before 21st March on the Form of Admission of Postgraduate Students, obtainable from the Registrar, University College, Gower Street, London, W.C.1.



### Nature Conservancy Awards

The Nature Conservancy are offering a limited number of awards for 1960/61 to students accepted by University College for the diploma course. Candidates who are interested in seeking a grant from the Nature Conservancy to attend the diploma course should apply before 1st April to the Nature Conservancy at 19 Belgrave Square, London, S.W.1, for an application form.

Candidates for research studentship awards from the Nature Conservancy, for post graduate training in ecology leading to a higher degree at London or some other British university, may also apply to the Nature Conservancy for an additional award to attend the diploma course either before or after the tenure of a research studentship.

They are reminded that separate application for admission to the diploma course must be made to University College, London.

## Obituary

WILLIAM QUIBELL, or "Q", as he was known to so many of his entomological friends, passed away in hospital at Huntingdon on 26th November 1959 at the age of 82. He was born at Welton-le-Wold, near Louth, Lincolnshire, on 28th August 1877; he served over 28 years in the Lincolnshire Constabulary, and retired with the rank of Inspector.

His entomological career began when he saw a kitten playing with an *atropos* larva when on his beat. He removed to Somercotes about 1913, where he met the village parson, old Proudfoot. Proudfoot used to sugar his whole parish each night and "Q" was much interested and quickly became addicted to this practice. From then on his whole spare time was spent in collecting, and he became a first-class entomologist, not merely a collector.

Among his entomological exploits was breeding a very fine series of *Cirrhia ocellaris* Borkh.: he and Stanley Smith discovered the secret of oviposition, and bred them on. He may well have been the last person to see *Apamea pabulatricula* Brahm in numbers in Lincolnshire; it disappeared from its last stronghold about 1918.

On his retirement he settled at Brampton in Huntingdonshire, where he was a close neighbour of the Rev. Gilbert Raynor, and he used to tell some entertaining stories about this famous breeder of magpie moths.

He was a great lover of the fens and used to visit the classical localities regularly right up to the time when he was incapacitated, and his series of hairstreaks and blues, many of them bred, were particularly fine. Last August he stayed with Mr. Pilcher, and at the end of the month they collected *extensaria* from recently reclaimed land with the intention of putting them down at another place on the coast where there is a good growth of *Artemisia absinthium*.

I met "Q" on two or three holidays staying at Altna Craig, Aviemore, and he gave me much good advice and information, and my son used to desert my sugaring round in order to be in "Q's" company. His large circle of friends will mourn the passing of such a gentle and happy man.

C. C.

## Editorial

I would like to remind readers that it is they who make this magazine; my task is merely to bring their work together, and I would particularly like to dispel any diffidence which may be felt by some readers about putting pen to paper, for while I am thankful for the hard core of regular contributors, there is always space for new names. Should material submitted be considered unsuitable, the writer will be informed of the fact in a kindly and polite manner, and where this would be helpful, the shortcomings would be pointed out, but I would add that such treatment of matter received is very rarely necessary.

An innovation this year is the sending of twelve free separates of articles contributed, so when no more than this number of copies is required, there is no need to advise me with the article, but should more than twelve copies be required, these can be provided at cost price as in the past, but it is necessary to advise me at the latest when returning the galley proofs.

Mr. Chalmers-Hunt's catalogue of the lepidoptera of Kent will be published in parts from time to time as the material comes to hand. A certain number of reprints are being made at the same time and held for stock, so that those wishing to bind the catalogue separately when complete will be able to buy separate copies when the work is completed.

Finally, a magazine prospers on its circulation, so do not forget to persuade that friend who is not yet a subscriber to become one without further delay, and never let a chance pass to ask suitable people for articles, even though they are not yet subscribers.—ED.



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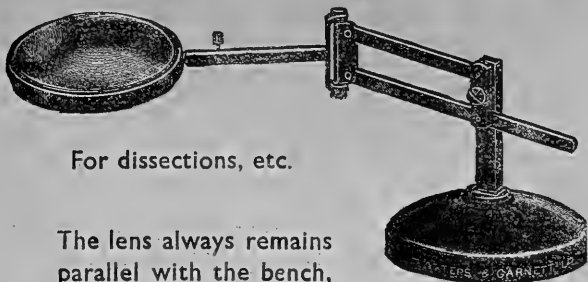
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(Founded by J. W. TUTT on 15th April 1890)

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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*Edited by* S. N. A. JACOBS, F.R.E.S.

*with the assistance of*

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# Further Notes of Earlier Stages of the Purple Emperor

By I. R. P. HESLOP

In the course of two papers (*Entomologist's Gazette*, Vol. 6, p. 69, and Vol. 11, p. ) I have traced in detail, through the medium of two separate specimens, the life history of the Purple Emperor from just before the last moult up to and including the act of emergence. In the course of 1956-57 I for the first time bred the species right through from the egg laid in captivity to the imago, a female. Unfortunately, owing to frequent absence from home I was unable to record observations in anything like the same detail as previously. Nevertheless, I hope that the salient features may be of interest, more especially since I have been able to bring into the picture—from a slightly later stage of development—the breeding of a male in the following season. It is an added feature of interest that the female emerged in an exceptionally early imaginal season, and the male in an exceptionally late one. The male treated is actually the same individual the emergence of which is described in my last paper above mentioned; but there is no redundancy, since in neither of the two present descriptions do I carry the detailed story beyond the first moult. There is an occasional incidental reference to an *Apatura ilia* Schiff., which was bred in the adjacent cage to the male *iris*, for purposes of comparison. I should mention also that I have never seen the egg hatch, but here I feel I cannot do better than refer the reader to R. F. Aitken's note at page 215 of the *Entomologist's Gazette*, Vol. 6.

In the following account it should be remembered that the ♂ and the ♀ were actually bred in separate seasons, with very different weather. I call them here by their sexes from the outset, though of course there was at first no means of telling the difference: nevertheless in each case the sex of the larva was correctly diagnosed shortly after the last moult, and I am making some further remarks below on the features which enabled me to do so.

There is first the comparative table of main events to consider.

	♀ (ex Wilts) 1956-57	♂ (ex Sussex) 1957-58
Capture of parent female	7 August	—
Laying of egg	15 "	—
Hatching of egg	28 "	—
First Moult	10 September	—
Transfer from glass-topped tin to growing bush	22 "	—
Second Moult	25-27 ", (between)	—
Taking of larva	—	12 October
Placing of taken larva on growing bush	—	13 October
Last noted to feed	9 November	1 November
Took up final position for hibernation	8 December	2 "
Intermediate movements	January 4, 26; February 9, 16	25 January

First positional movement, post hibernation	22 February	31 March (circa)
First marked colour change	ditto (about)	ditto (about)
First noted to feed	11-14 March (between)	3 April
Third Moults	25 April	6 or 7 May
Fourth Moults	26 May	29 „
Fixed for pupation (i.e. turned head-downwards for last time)	17 June	16 June
Pupated	19 „	18 „
Emerged	5 July	9 July

There follows the actual transcript from the Log-Book relative to the female.

Transcript of Notes on breeding of a female *iris*, 1956-57

Tuesday, 7 August 1956: Parent female taken in Wiltshire.

Wednesday, 15 August: Eggs laid, 17 in all.

Tuesday, 28 August: Two eggs hatched in the early morning: the two infant larvae were placed on a growing bush of Broad-leaved Sallow. One larva remained still, but the other (which is the subject of these notes) wandered about restlessly, and ultimately could not be found. An inch by inch search with the magnifying glass showed that it was no longer on the bush, nor could it be seen on the surface of the soil of the pot.

However, a subsequent further search on the pitted and hummocky surface of the soil did ultimately reveal the minute object, which must have crawled from under some crumb of soil.

Both larvae were then placed, with fresh-picked leaves, in a glass-topped tin.

[The remaining 15 eggs, though some of them already looked ready for hatching, subsequently died.]

Saturday, 1 September: Took the two young caterpillars in the breeding tin with me when we proceeded to Studland for a holiday.

Monday, 3 September: One of the larvae (the one which had remained still when first placed on the bush) died this evening. It had been ailing since before the departure from home. The survivor is flourishing, and is growing.

Friday, 7 September: Larva started to lay up for moult.

Monday, 10 September: Larva underwent 1st moult between 7.30 a.m. and 8.30 a.m. Later in the day it ate whole of cast skin.

Friday, 14 September: We returned home (Burnham-on-Sea) from Studland.

Saturday, 22 September: Transferred larva to bush. Sprayed.

Friday, 28 September: Larva had apparently undergone 2nd moult since last viewed on previous Monday (24th).

Saturday, 6 October: Sprayed larva.

Sunday, 21 October: Sprayed larva.

Friday, 26 October: Sprig on which larva has its seat now almost entirely withered. Larva restless.

Sunday, 28 October: Sprayed larva. It moved slightly.

Thursday, 1 November: Found that larva had moved to a fresh bunch of sprigs and had been feeding extensively thereon. Fresh droppings visible on its new seat leaf.

Sunday, 4 November: Sprayed larva. It raised forepart.

Friday, 9 November: Believe that larva had been feeding a little.

Sunday, 11 November: I sprayed larva. As I did so the stem of the seat-leaf (despite its silk fastenings) partly broke off. Propped the leaf—still quite green—over another.

Friday, 16 November: Found that larva had transferred itself to twig. Head downwards. Sprayed it. Still bright green.

Friday, 23 November: Larva still head downwards. Still bright green.

Saturday, 24 November: Larva still head downwards.

Sunday, 25 November: *Morning*. Larva turned head uppermost: still at exactly the same spot. Beginning to change colour. I sprayed it.

*Evening*. When I inspected at 8.17 p.m. larva had turned head downwards again.

Monday, 26 November: When I inspected at 7.02 a.m. larva was still head downwards but at a slightly higher position on the stem.

Friday, 30 November: When inspected at first opportunity (7.45 p.m.) after my arrival home, larva was head downwards. Colour change no further advanced, i.e. larva a shade of green.

Saturday, 1 December: Inspected 11.21 a.m. Larva now head upwards. A trifle higher up the stem than previously. Next inspected 7.21 p.m.: still head uppermost: no change in position.

Sunday, 2 December: Larva inspected three times to-day. No change. Sprayed.

Monday, 3 December: Larva inspected at 7.0 a.m.; as before.

Friday, 7 December: Inspected at 4.20 p.m., just after my arrival. Larva had now moved several inches down from last position. At rest head upwards on main stem, a little below junction of a twig.

Saturday, 8 December: Inspected at 8.0 a.m. Had moved two or three millimetres upwards, so that tip of horns now just level with bifurcation.

Sunday, 9 December: No change in position in morning. In afternoon I sprayed larva: it moved head.

Monday, 10 December: Inspected 7.0 a.m. No change of position. Fawn colour now beginning to appear.

Tuesday, 18 December: Returned from Salisbury in the afternoon for the holidays. Larva just a shade higher on the stem than when last seen. Still quite green. It was a lovely day: mild, still and sunny.

Wednesday, 19 December: In the morning saw a just perceptible movement, in the forepart, of larva. In the afternoon it became much colder, with fog.

Thursday, 20 December: Colour change now beginning to progress. Now cold.

Sunday, 23 December: Sprayed larva in morning. Colour change now considerably advanced, but greater part of larva still a shade of green.

Sunday, 30 December: Larva quite still, but colour-change no further advanced. Sprayed it in afternoon. To-day and yesterday very mild after several cold days (including snow on Christmas Day). South wind.

Monday, 31 December: Still very mild. Larva as before.

Tuesday, 1 January 1957: Raw, foggy and cold. When inspected in afternoon larva had turned head just a shade towards the right.

Wednesday, 2 January: Head straight again.

Thursday, 3 January: No change when inspected in morning.

Friday, 4 January: When I inspected in morning I found that larva had turned head downwards. The tip of the tail was just a little higher on the stem than the ends of the horns had been on previous day. Still largely a shade of green.

Saturday, 5 January: When inspected at 12.53 p.m., larva (still head downwards) was found to have assumed an attitude more diagonal in relation to the stem: i.e., the tail half had moved a little to the left, and the forepart a little to the right (in relation to itself, not to the observer).

Sunday, 6 January: Inspected at 1.0 p.m. No change in position or attitude. Sprayed.

It was so warm and sunny that we were able to have our lunch outside! (This was the first time ever in January, the only month in which we hadn't done so hitherto.)

Sunday, 13 January: Larva had been inspected each day, but was still head downwards and there had been no movement or change in position up to and including inspection at 12.05 p.m. to-day. Sprayed it.

Monday, 14 January: When examined at 8.30 a.m. this day (i.e. before my departure for Salisbury), larva was just as on previous day. Colour still to be described as green rather than anything else.

Friday, 18 January: On return to "Belfield", this evening, I found that larva was still in the same location as before, and still head downwards, but now more exactly in line with the stem (i.e. no longer slightly athwart it).

Sunday, 20 January: In late morning sprayed larva: unchanged from Friday.

Friday, 25 January: Larva just as when last seen.

Saturday, 26 January: In morning, larva found to have moved downwards on the stem for two or three millimetres. Still head downwards. Head just a little nearer to the window side of the stem.

Sunday, 27 January: As on previous day. Sprayed in morning. While this was going on the larva stirred perceptibly.

Monday, 28 January: Inspected at 6.15 a.m., prior to returning to Salisbury. No change. Larva still a shade of green.

Saturday, 2 February: I had returned at a later hour than usual on the Friday, owing to the necessity of inspecting woods on that day. Larva if anything just a shade lower on the stem: still head downwards.

Sunday, 3 February: Sprayed larva in afternoon. Now generally a greenish brown in colour: except for tail, which still quite green.

Wednesday, 6 February: Saw a Small Tortoiseshell in the garden of

the Modern School, Salisbury, at 1.0 p.m. It flew off freely, high into the air. Very sunny.

Weather had been for some time uniformly mild, even at night. In fact, there has been no winter yet, except the very brief (and not really severe) interlude at Christmas.

Friday, 8 February: When inspected this evening at about 7.0 p.m., larva was in exactly the same position and attitude as when last seen.

Saturday, 9 February: Inspected at about 11.0 a.m. Larva had moved about  $\frac{1}{4}$  inch down and had also moved its forepart across so that it was now placed diagonally on the stem with its head actually projecting clear of the stem. It moved its horns as I was watching it.

Now that I saw it in the daylight, I observed that it was *much more green* than when last seen. In fact, there was very little of the brown colouration remaining on it. Sprayed it.

Sunday, 10 February: Larva exactly as when seen on previous day.

Friday, 15 February: Larva first inspected about 7.30 p.m. Greener than on last occasion. Had moved slightly more into line with the stem (head still downwards).

Saturday, 16 February: During morning sunshine larva had moved into a more oblique position, in relation to the stem, than ever before. Forepart also standing further clear of the stem than at any time previously. Head still downwards. Had not moved up or down the stem. Was still stirring when first inspected at about 10.0 a.m.

Sunday, 17 February: Sprayed larva at about 11.0 a.m. In exactly the same position as when last seen. Inspected on several further occasions during the day, but no sign of any movement.

Thursday, 21 February: When inspected about 7.30 p.m., larva was exactly as when last seen.

Friday, 22 February: In morning sunshine, larva moved over to adjacent quadrant of stem, taking up an exactly diagonal position (head still lower than tail). Still stirring at 10.30 a.m.

Saturday, 23 February: Sprayed in morning. Larva now more in line with stem; head still downmost.

By inadvertence, left off celluloid cylinder all night.

Sunday, 24 February: Replaced celluloid cylinder and lid immediately after breakfast. There had been no movement in larva. Now much greener than had been a week ago.

Weather now much milder than had been for the past ten days.

Monday, 25 February: No change.

Friday, 1 March: When inspected at about 7.0 p.m. larva found to be almost exactly vertical, with head still downwards.

Now almost normal green in colour.

Saturday, 2 March: Sprayed larva in morning. Stirred slightly, but did not change position.

This was a most beautiful day. I saw 5 Small Tortoiseshells on our land (the children saw 7).

Sunday, 3 March: No change.

Again a most glorious day. I saw 4 Small Tortoiseshells on our land. We had lunch outside.

Friday, 8 March: No change in larva's attitude or position from last week, when inspected this evening.

Saturday, 9 March: No change.

Sunday, 10 March: No change. Sprayed in afternoon. Colour a bright green, with only a trace of brown on the forepart.

Friday, 15 March: When inspected this evening, larva was found to have moved to a different stem where it was now head downmost at the base of a half-opened leaf-bud. But it had been nibbling at the tender shoots.

Saturday, 16 March: Inspected several times during the day, but no change from yesterday's position. Weather very dull.

Sunday, 17 March: Inspected at least twice during the morning, but no change from position as observed on Friday.

Sprayed in afternoon, when stirred slightly. Dull all day, with heavy rain at times.

Friday, 22 March: This evening, on my return, I found larva (head uppermost) on young stem just below leaflets, on which it had been feeding. Normal bright summer colour all over.

Saturday, 23 March: In morning found larva head downwards just below previous site. In afternoon found it head uppermost in same site as in morning.

Sunday, 24 March: In morning found larva on tuft of young leaves, on which it had been feeding.

At 12.0 noon found still on same leaf, but to have changed position slightly. Sprayed. Larva stirred.

Had not changed position when last inspected at about 9.30 p.m.

Had grown considerably since previous week.

Monday, 25 March: When inspected at 6.15 a.m. (before my departure), found on another leaf. Now still: but had been feeding.

Friday, 29 March: Returned from Salisbury for holidays. Found that larva had been eating extensively. Observed eating to-day.

Saturday, 30 March: Larva eating normally. Sprayed it at about noon.

Sunday, 31 March: Larva eating normally. Rested for a time, head downwards.

Monday, 1 April: Normal.

Tuesday, 2 April: Normal.

Wednesday, 3 April: Normal.

Thursday, 4 April: On this and previous days, larva had been observed to feed regularly just after sundown, and to rest most of the day—though it often fed in the middle of the day.

Very restless to-day.

Friday, 5 April: Feeding a little in the morning. Then went to stem and sat up in "begging" style.

Had not again been observed to rest head downwards. Now growing fast, though leaves of Sallow seem to be wilting.

Saturday, 6 April: Weather turning cooler (though had been dry for a week), but larva still feeding normally.

Sunday, 7 April: Now much colder. Larva's movement and feeding reduced. Leaves of plant curling up (? caught by frost). Larva looking quite healthy, however. Sat on leaf most of day.

Monday, 8 April: Weather as on previous day. Movement and feeding about the same also. Sat on leaf most of day.

Tuesday, 9 April: On stem all day, save for short spell after sunset when ate vigorously. It was dull and cold all day.

Wednesday, 10 April: Sprayed larva at 8.0 a.m. Larva raised forepart; still on stem. It was dull and very cold all day.

At 11.20 p.m. found to have moved to an upper sprig, where it had been feeding and was now resting. Freezing at time of this inspection.

Thursday, 11 April: At 6.55 a.m. in same place as late last night but now in "begging" attitude.

In evening (about 7.0 p.m.) found still on same leaf, but had changed position and attitude.

Friday, 12 April: At 10.0 a.m. on same leaf as yesterday; again in "begging" attitude. Had, I think, been feeding during night.

First substantial rain to-day for a fortnight.

Saturday, 13 April: Warm and sunny. Caterpillar torpid all day—not seen to move at all.

[Note.—Change over to SUMMER TIME took place during night of 13-14th. Times henceforth are B.S.T.]

Sunday, 14 April: Dull but mild. Larva again torpid, but stirred slightly when sprayed this afternoon.

Monday, 15 April: Dull and rather cool. Larva still in complete torpor all day.

Tuesday, 16 April: Warm and sunny. Larva did not feed until evening (after several days apparent fast) and then only very little.

Wednesday, 17 April: Larva eating vigorously in evening. Had been motionless all day before this.

Thursday, 18 April: Sprayed larva in morning. I also placed in cage a small additional potted plant of Sallow, with foliage touching the lower part of the old one.

In evening (after sunset) larva moved for first time to-day and ate voraciously and extensively on the old plant.

Friday, 19 April: Larva had moved back to seat-leaf when first seen in morning. On seat-leaf again when next seen, in evening, but I think had fed a little.

Saturday, 20 April: Motionless all day on seat-leaf.

Sunday, 21 April: Completely motionless all day, except that when sprayed in morning larva depressed forepart slightly for a few minutes. Paler in colour.

Monday, 22 April: When examined at 8.0 a.m. in position as before.

Tuesday, 23 April: Sprayed larva in morning. Motionless all day save that a slow backwards and forwards movement of the forepart (the larva being fastened by the hind part) commenced at about 6.0 p.m. and continued for at least an hour and a half.

One movement from right to right back was timed and found to extend to approximately ten minutes. But the period appeared to vary.

A small extraneous black particle was seen on the lower dorsal part in the morning. But this was washed down for a distance of about one millimetre by the spraying.

Wednesday, 24 April: No movement again to-day, save that the same slow sway was observed at about 1.0 p.m. and again at 6.45 p.m.

This is the fifth day of complete fast, and obviously larva is either in set for 3rd moult (early), or is going to die.

Thursday, 25 April: Faint but slower backwards and forwards movement apparent at various times from 8.0 a.m. onwards. Sprayed at about 8.30 a.m.; this was followed by the faintest possible movement of the forelegs. By this time also the anal extremity was no longer touching the leaf.

Moulted at about 11.0 a.m. Larva then lay more horizontally (but across the leaf) until evening.

Ate cast skin between 8.30 and 9.0 p.m. and then assumed the normal upright position along the midrib of the pendent seat-leaf.

No further movement up to 11.30 p.m., when last inspected.

Friday, 26 April: When first inspected at 8.10 a.m. larva was found to have moved to another leaf and also to have eaten a little. Sprayed it.

At 11.0 a.m. was observed to be moving about extensively and also feeding.

When next inspected, at 5.0 p.m., was motionless on another leaf (on which it had been feeding).

At 9.0 p.m. was crawling up stem.

At 10.10 p.m. was still, on yet another leaf, but had been feeding very extensively.

Saturday, 27 April: On first inspection at 8.15 a.m., larva was found at rest sitting up on remnant of leaf on which had moulted. Had been feeding liberally during night.

At about 7.0 p.m. larva brought forepart into closer proximity with leaf. This was first sign of stirring to-day.

At 10.30 p.m. it was found at rest on fresh leaf, with head downwards. Had been feeding extensively.

Sunday, 28 April: At 8.45 a.m. found at rest on another (horizontal) leaf. Had been eating, but not so fully as on previous occasions.

At 5.0 p.m., just before my departure for term at Salisbury, larva was found to have moved to another leaf (hanging vertically) on which it was resting head downwards.

Friday, 3 May: On my arrival home this evening larva was found to have grown very much and to be sitting up on new leaf.

At 8.50 p.m. it was observed feeding very voraciously at different site.

Saturday, 4 May: Found on seat-leaf in morning. In afternoon found resting on different leaf and to have been feeding extensively during the day.

In evening was observed feeding at 8.45 p.m. At 10.30 p.m. was at rest, but had been feeding very extensively.

Sunday, 5 May: Larva at rest on seat-leaf until sprayed at 4.50 p.m. when moved head and forepart very emphatically. At 8.30 p.m. observed to be feeding in vicinity of seat-leaf.

Watered plants in cage also this day, as I usually do after spraying larva.



When last seen about 11.0 p.m. was at rest on mid-rib (all that was left!) of seat-leaf.

Monday, 6 May: At 6.30 a.m. larva was found at rest on a wholly different and widely-removed sprig. It had evidently fed further during the night of the original sprig.

Saturday, 11 May: At 7.30 a.m., eight minutes after my arrival home, I found larva on lower part of bush. Former sprig had been eaten out. Inspected several times to-day, but always—until as mentioned below—sitting up motionless on seat-leaf.

At 8.35 p.m. found eating vigorously.

Sunday, 12 May: Larva motionless on seat-leaf all day until found eating very voraciously at 9.25 p.m. Seat-leaf had been completely demolished and larva was in new location.

At 11.12 p.m. (last inspection) found at rest on new seat-leaf.

Monday, 13 May: At 6.40 a.m. (before my departure for Salisbury) larva was found at rest on another leaf and also to have been feeding further, and extensively, since last seen on the previous evening.

Friday, 17 May: Larva found at rest when first inspected (6.0 p.m.) after my arrival. Subsequently (after sunset) ate hugely.

Saturday 18 May: At rest in morning, head downwards on stem. When sprayed at about 1.0 p.m. it turned right way round and then moved on to leaf (apparently seat-leaf).

Fed a little in afternoon, then moved back to seat-leaf again.

In evening, started to feed much earlier (about 8.20 p.m.). Ate very heavily.

Sunday, 19 May: At rest on seat-leaf in morning, "sitting-up". About mid-day found resting head downwards on main stem; had apparently been eating.

In afternoon, back on seat-leaf again—"sitting-up". At 10.0 p.m. was again at rest on main stem head downwards and a little clear of the stem, to one side. At 11.30 p.m. larva was at rest again on its seat-leaf (prone).

Noticed a little blight on leaves of the bush.

Monday, 20 May: At 6.40 a.m. found on seat-leaf where last seen on night before, but with the forepart now slightly raised (not, however, amounting to "sitting-up").

Friday, 24 May: Found larva at 5.0 p.m. motionless on same seat-leaf as before and obviously in set for moult.

Saturday, 25 May: As before. Sprayed in morning. Faint movement of anterior part subsequently visible.

Sunday, 26 May: Larva completed moult (4th) at 11.30 a.m. Motionless on seat-leaf subsequently.

When viewed at about 6.30 p.m. was found to be covered with mite-like insects [see below] and to have crawled up naked stem where, though it was still soft, it was lashing about desperately.

Took it off and cleaned it and placed it on new bush (of "cabbage" type) in other cage where it span a pad and settled down.

Monday, 27 May: When viewed at 6.0 a.m. larva was in reverse position to when last seen. Also, had been feeding extensively off very large seat-leaf during night.

A few points in the post last-moult history of the above specimen (i.e. the female) may be noted. At about 1.0 p.m. on Sunday, 2nd June, the larva was again found to have a mite-like earlier stage of *Aphis* upon it, this time one only and on the right horn, but it left the larva before I could fetch apparatus to collect it. On 8th June, at about 2.30 p.m., the larva was interrupted by a thunderstorm while in the middle of a huge meal. At the sound of the first peal, and before there was any rain, she "froze"; she had resumed eating at some time before 4.0 o'clock when she was observed to be back on her seat-leaf. On 10th June, at 4.30 p.m., the larva was for the first time observed resting (on her seat-leaf) with the head downwards. At 6.10 a.m., on 11th, another pre-pupation sign was noted: in that the larva was found to have been feeding extensively right round the *edges* of a leaf, instead of cutting out a portion cleanly down to the mid-rib. On 14th June, between 6.0 and 6.15 p.m., the larva was observed to be spinning up the joint of the lowest leaf of the bush. I had thought that this was the leaf chosen for pupation, but actually the spinning was only a precaution—in view of the larva's now great weight—before feeding. After eating heartily from other leaves on this and the following day, she attacked after sunset on 15th the spun-up leaf and completely demolished both it and another leaf (apparently also already spun up) during the course of that night.

The point of the operation mentioned became apparent when I sprayed the larva and the leaf on which it was then resting at 4.30 p.m. on 16th. The leaf was already borne down by this large larva, so that the additional weight of the droplets was just sufficient to cause it to become detached, and I was only just in time to save the larva from a nasty fall. This day, 16th, was the last on which the larva was actually seen to eat (foray commenced 9.31 p.m.).

The measurement of the larva was: 8th, 48 mm.; 14th, 54 mm.; 16th, 55 mm.

On 17th the larva, on the under-side of the leaf, performed the act of "double reversal". Fixing for pupation may be considered to commence at this moment; and pupation did occur, promptly, on 19th. Colour photographs of the larva were taken by flashbulb on 14th—she changed position hurriedly between the photographs!—and of the pupa on 23rd. The pupa was 32 mm. long on 23rd and 34 mm. on 30th. The imago emerged normally on the morning of 5th July.

Regarding the male, the points below, only, relative thereto, are quoted from the Log-Book. The larva was collected on 12th October 1957, its presence having been indicated by frass. But before I proceed to the account of this specimen, I may perhaps be permitted here to interpolate some remarks relative to the collecting of the larva in the autumn. Quite recently I heard, with some surprise, of beating being practised, "quite successfully", for the autumn larva. Under average conditions, the collector can scarcely have left a leaf, and therefore a larva, on the bushes he beat. Yet I dare warrant that not one-tenth of the larvae that came off were picked up. The remainder must all have perished; whereas there may be a slender chance of the spring-beaten larva recovering its bush, I do not think there is any at all for the larva in autumn. Incidentally, I do not think that a larva *on its*

*pad* can normally be beaten off at any season, except perhaps at moult or when quite full fed, but obviously the whole leaf may be.

I, myself, was an early convert from beating to searching in the spring. I have never practised beating in the autumn.

A legitimate method of locating the caterpillar has already been mentioned. Here it may be mentioned also that while in a very wet autumn, such as that of 1958, the chief enemy of the young larvae was probably the rain which must have washed most of them off the leaves; moderate rain may have some beneficial effect in washing away the tell-tale frass and thus removing a clue for the collector and, very probably, for birds. Autumn gales, as in 1959, are obviously another hazard.

In an autumn when conditions are those of drought, the larvae are usually to be found a little higher on the bush than normally; since under such conditions a sallow bush will always lose its lower leaves before its upper ones, and the larva is prepared for this fact. When drought conditions prevail actually at laying time, the parent female will allow for this factor by choosing bushes growing under especially moist conditions: perhaps even quite small ones almost masked by tall rushes, reeds, etc., which do not die back until the sun has lost its harmful effects, and which grow again before it regains them. As I have indicated previously, the winter sun, even in the afternoon, is not harmful to the larva, and no protection is required therefrom.

To return to the male larva: on 13th October, i.e. on the day following his taking, he was transferred from the collecting tin to a potted bush of Broad-leaved Sallow. I usually place a newly-collected larva on a leaf lying fairly flat, and I did so now. Larvae usually settle down, for some hours at any rate, when so placed, but nothing would satisfy this larva but a leaf with its edges vertical which he eventually, after many wanderings and second thoughts, found at the portion of the bush furthest removed from where I had first placed him. He nibbled freely at the upper edge of the leaf, taking his first observed meal at 4.40 p.m. A day or two later the tip of this leaf began to curl up, and in this cup the larva made his seat. Although he wandered far afield and made extensive meals elsewhere, he never did more than nibble this leaf. The larva at this period prefers a naturally yellowing and searing leaf, and it was on one such that I put him, on another such that he settled down, and others such that he ate. The plant had several sprigs of much fresher and greener leaves, and although he encountered several such on his wanderings he never tried to feed on them. As his leaf curled a little further, this larva made his seat nearer the middle: on 30th October he span it to the stem, and on this leaf he hibernated. It may be noted that in the wild state the pre-hibernation larva always rests at the tip of the leaf.

*(To be continued)*

## A Note on the Early History of *Coscinia cribrum* (L.)

By S. C. S. BROWN, F.D.S., F.R.E.S

C. W. Dale, in his *Lepidoptera of Dorsetshire*, says: "*Eulepia cribrum* Linn. Parley Heath, where it was first discovered to be a British species by J. C. Dale on June 26th, 1820". The text remains unchanged in Edition 2, published in 1891. This species was first described and figured in a British work by John Curtis in his *British Entomology*, 1824-40. The plate, No. 56, is dated 1st February 1825. He says: "Several males have been taken by Mr. Dale in different years, the end of June and the beginning of July, upon Parley Heath, Hampshire, and two females were captured on the same ground about the middle of June last year. Mr. Bentley has also taken the male near Ringwood, in the same County". Stephens, *Illustrations of British Entomology*, 2, 1829, p. 92, says: "For the discovery of this species as an inhabitant of Britain, entomologists are unquestionably indebted to the exertions of Mr. Bentley, who captured two males in June 1819, near Ringwood, and kindly supplied my cabinet with one of them, on his return home in July; in the following year Mr. Dale also detected its habitat in the same vicinity (Parley Heath, Hants.), and has since taken the insect in plenty, and to him I am obliged for part of my series". Who, then, was the first to discover this species in Britain? Bentley lived in London and was a friend of Curtis, Stephens and Dale. He was an experienced collector and frequently visited the New Forest. There does not seem any reason to doubt Stephen's statement that Bentley took *cribrum* in 1819, a year before Dale.

In the Dale Collection, now in the Hope Department, University Museum, Oxford, there is a series of 21 specimens of *cribrum* with a single label at the bottom—"Parley Heath". Bentley gave up collecting about 1846 because of eye trouble. The fate of his collection appears to be unknown. The Stephens Collection, now in the British Museum (Nat. Hist.) has a series of four specimens of *cribrum*; unfortunately, they are without data. We know that Curtis had a series in his collection, and that at an early date, for in the text against his plate No. 56, dated 1825, one reads: "I am indebted to the assiduity and kindness of my friend J. C. Dale, Esq., for the specimens that enrich my cabinet". Through the parsimony of the naturalists of that time the Curtis Collection, together with the MS. Catalogues, was allowed to go to Australia after his death in 1862, and thus the most important collection of British insects made up to that period was lost to this country. In the *Entomologists' Monthly Magazine* for 1904, J. J. Walker, R.N., wrote a paper entitled "Some Notes on the *Lepidoptera* in the 'Curtis' collection of British Insects". In 1903 he had visited Melbourne and inspected the museum there. He gives an account of a good number of the historic specimens in the collection and quoted extracts from the Register, but he does not make any reference to *Coscinia cribrum*.

Parley Heath in question is a triangular-shaped area of heath and marshland of about six square miles with its apex on the Ringwood-Poole road and its base along the Christchurch-Hurn-Wimborne road.

Up to quite recently it formed an integral part of the great stretch of barren heathland which covered so much of the South-Western corner of Hampshire and the South-Eastern part of Dorset. On the southern fringe of Parley Heath is a small wood known as Parley Copse. This wood was mentioned in Domesday. The local village council has now purchased this wood, and it is to be preserved as an open space. It was here, in June 1816, that the famous Dr. Abbott took *Cyaniris semiargus* (Rott.). The butterfly seems to have existed there for some years, for it is recorded that T. Vine, a labourer employed on Dale's farm at Hurn, and who used to do some collecting, took one on 28th May 1833.

The discovery of *Coscinia cribrum* by no means exhausted the riches to be found on the Heath. In June 1823 Dale found *Cleora cinctaria* (Schiff.) in the New Forest. The first record for Britain. The next year he found it at Parley, and subsequently it was taken there not uncommonly. On 18th June 1824 Dale beat out of a birch tree on the edge of the Copse a male of *Pachythelia villosella* (Ochs.), which proved to be a species new to this country. In consequence of these discoveries, it was not long before Parley Heath became a famous place, but it still remained a locality infrequently visited by entomologists because of its remoteness and inaccessibility. It was not until 1857, when the railway was extended from Southampton to Brockenhurst and on to Ringwood and Wimborne, that the collectors from London were able to visit the place in reasonable comfort. Here came Frederick Bond, the Rev. Joseph Greene, the Rev. O. P. Cambridge from Bloxworth, Dorset, George Gulliver the professional collector from Brockenhurst, C. Turner, and G. B. Corbin of Ringwood. The last named was a nephew of Bentley, and was a schoolboy at this time.

It was on the heathland between Ringwood and Wimborne that the Rev. O. P. Cambridge and F. Bond discovered, for the first time in Britain, the Smooth Snake, *Coronella austriaca* Laur. This was in 1853, but was not recorded until 1859. The great attraction of the Heath was, of course, the occurrence of *Coscinia cribrum*. This species could be found in several spots between Ringwood and Wimborne, sometimes in abundance. Sydney Webb owned an interleaved copy of Stainton's "Manual" which belonged to F. Bond. In reference to *cribrum* it contained these words, written by Bond himself:—"Near Ringwood, in the New Forest, about two miles upon the Poole Road, at a place called St. Lawrence, opposite the Inn there." Brief as this note is, it contains two errors. Ringwood is not in the New Forest. There is no such place as "St. Lawrence." The name of the hamlet is St. Leonards. The Inn was known as the "Malmesbury Arms" and was on the Poole-Ringwood road exactly one furlong N.E. of St. Leonard's bridge and in Hampshire. It is no longer an Inn, the license expired about 1890. The house still stands, and is but a four-roomed cottage, so the Inn could have been nothing more than an Ale House. It is of some considerable age, for it is present on the one inch Ordnance Survey Map, 1st Edition 1803-11. It does not require much imagination to picture these early naturalists visiting this Inn after a days collecting on the surrounding heaths, to compare their captures and to drink the ale, which was 1½d a pint in 1859. The species seems to have had its headquarters on the heath

opposite the Inn. In fact, the old collectors called this spot the "Cribrum Heath." J. Fowler, writing in the *Entomologist* for 1899 said that he had quite recently taken over 40 specimens there. He also stated that at the same time he took it at Verwood and in the New Forest.

In the Hope Department, University Museum, Oxford, are preserved, with the Dale Collections and Diaries, 53 letters from Corbin to J. C. Dale, written between the years 1862-67. In one of these letters Corbin says that he took, in 5 visits to St. Leonards, 90 specimens of *cribrum*. Nearly 40 years later he wrote a paper in the *Entomologist* for 1899 entitled "*Emydia cribrum*: A Reminiscence." He said that he had known the species since his schooling days—about 1860—and that he had found it literally swarming in certain spots. He had taken up to 60 specimens in one evening by "assembling". E. R. Bankes, in a note on *Emydia cribrum* in the *Entomologist* for 1899, refers to the famous spot opposite the Inn. He says: "The exact spot of heathland where Mr. Bond used, year after year, to work for the insect, accompanied by George Gulliver and sometimes by the Rev. O. P. Cambridge, being well known to me. It is situated in Hampshire, though very near the boundary of Dorset, and although not within the limits of the New Forest, it is only about four miles from the western edge of that tract."

In view of these records I cannot be reconciled to Mr. Parkinson Curtis's statement in his "A List of the Lepidoptera of Dorset". He says:—"The Hampshire records 'near Ringwood' almost wholly relate to Dorsetshire, the errors being based on geographical ignorance or carelessness, or both."

I am grateful to Prof. Varley, Hope Professor of Entomology, University Museum, Oxford, for allowing me to examine the Dale collection and manuscripts. To Dr. Hobby, for answering my requests for information concerning the Dale Collection. To Mr. W. H. T. Tams, of the British Museum (Nat. Hist.), for examining the *cribrum* in the Stephens Collection, and to the late Lt. Col. C. W. Drew, D.S.O., at one time the Curator and Secretary of the Dorset Natural History and Archaeological Society, for information concerning the location of the "Malmesbury Arms."

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Curtis, W. P. 1934. *Trans. Soc. Brit. Ent.*, 1, Pt. 2: 185-286. A List of the Lep of Dorset. Introduction and Part 1.

454 Christchurch Road, Bournemouth

## *Volucella zonaria* Poda (Dipt., Syrphidae) from Bristol

By ADRIAN C. PONT

Most authors agree that in the West country Bristol marks the northern limit to the range of this fly, but I have only been able to trace three published records: hence a summary of this data and a further six hitherto unpublished records may be of some interest.

The first record for the area is that mentioned by Capt. Goffe (1943, *J. Soc. Brit. Ent.*, **2** (4): 174). He obtained the record from Mr. H. Audcent, who found the specimen, a female, amongst some Diptera sent to him for identification: it was caught in the third week of July 1943 on a window in Redland, Bristol, by Mr. E. Livingstone. The same specimen is also mentioned by Audcent in 1949 (Bristol Insect Fauna, Diptera, *Proc. Bristol Nat. Soc.*, **27** (5) and **28** (1): 49).

The next two specimens were taken by Dr. E. E. Lowe (*vide* Woollatt, L. H., 1954, *Ent. mon. Mag.*, **90**: 65), both in 1950. The first, a male, was taken on 12th July on Dog Rose at Coombe Dingle, near Bristol, S. Gloucs., and the second, a female, on 13th October at Henbury, near Bristol, S. Gloucs., on Ivy Blossom.

This concludes the number of published records. The next specimen to be taken was a female, by Mr. E. A. Fonseca, at Failand, N. Somerset, on 26th September 1954, also on Ivy Blossom.

The next two specimens, both females, reside in the general collection of insects at Clifton College, Bristol, and neither has any data attached: both were taken by Mr P. M. H. Davis in his garden at Leigh Woods, near Bristol, N. Somerset. As far as I have been able to gather, both were caught in middle July, one in 1956 and the other in 1955 or 1957, but probably the former. Another specimen was taken in 1956, a male caught in late August on Michaelmas Daisy by myself, in my garden in Redland, Bristol.

1959 has seen a spate of records: the first, a male, was caught in June in Cotham, Bristol, by a Bristol University student; the second was also a male, taken by myself on 1st July, on a windy and cloudy evening, whilst resting in a sheltered corner of the window-ledge; in addition, Mr. J. C. Hartley of Bristol University informs me that four specimens were taken by Dr. Hinton's son which will be published separately. This sudden increase in numbers, particularly with the increased proportion of males to females in 1959, indicates that the species is extending its range and is probably breeding locally.

In conclusion, I should like to thank all those who have helped towards the compilation of this note, by contributing records or examining collections and the literature on the fly for me: Mr. K. G. V. Smith (Hope Department of Entomology, Oxford), Mr. J. Cowley (Somerset County Museum, Taunton, and Somerset Arch. and Nat. Hist. Society), Mr. E. C. M. d'Assis-Fonseca and Mr. J. C. Hartley.

26/2/60.

16 Woodstock Road, Redland, Bristol, 6.

## Notes and Observations

*STERRHA SERIATA* SCHRANK (*VIRGULARIA* HUBNER) IN MARCH.—A surprising visitor to a lighted window here last evening, 5th March, was a large fresh male of *Sterrha seriata* Schrank. This species usually emerges here in June, and in good summers it has a partial second brood of small specimens in early September, as happened last year. According to the text books it hibernates as a larva. "South" mentions that in captivity larvae from eggs laid in September were found to be feeding on withered dandelion in March, and produced moths, well

above average size, in the last week of April. Presumably my specimen had had in the wild a similar but even more precocious history.—R. F. BRETHERTON, Ottershaw, Surrey. 6.iii.1960.

*CROCIDOSEMA PLEBEIANA* ZELLER AT PORTLAND.—At dusk on 4th October 1958 I caught a *Tortrix* flying near the top of the path down to Church Ope Cove, Portland. I was unable to identify it at the time, and it was only recently that comparison with a series of *Crocidosema plebeiana* Zell. taken by Mr. J. L. Messenger last September in the Scilly Islands showed it to be undoubtedly of that species. I believe that *C. plebeiana* has not previously been recorded east of Devonshire. It would be interesting to know if its foodplant in the Scillies, the Tree Mallow (*Lavatera arborea*), has also been found at Portland.—R. F. BRETHERTON, Ottershaw, Surrey. 6.iii.1960.

A NEW NATURE RESERVE IN THE AVIEMORE DISTRICT.—Mr. P. Le Masurier writes pointing out that a new nature reserve has been established immediately west of Aviemore: it is known as the Craigellachie Nature Reserve and has an area of 642 acres. It includes the birch woods on the eastern slopes of Craigellachie and Craeg nan Gabhair. Written permission must be obtained from The Regional Officer, The Nature Conservancy, 12 Hope Terrace, Edinburgh 9.

In sending the permission to Mr. Le Masurier, the Regional Officer wrote: "I feel that visiting entomologists should be discouraged from taking specimens within the reserve, especially as the species sought could be found most probably in the neighbouring woodlands".

Mr. Le Masurier writes: "I have a map of the reserve here and it would appear that if one sugars the posts on the golf course side, one would be outside the reserve and quite in order. In any case, so far as I know, it is quite correct to say that there is nothing to be obtained inside the reserve that could not equally well be obtained outside. Therefore I would suggest that the reserve be avoided. Incidentally, the prohibition applies equally to the flora".—C. C.

TEMPERATURE BREEDING OF *COLIAS CROCEUS* FOURC.—After a disappointing failure of resident butterflies it was a joy to see *croceus* during the autumn. This irresistible insect has always appealed to me, so it is not surprising that every available opportunity during early October was spent in a clover field near my home. A fresh male was seen on 2nd October with another on the 3rd, nothing on the 4th, but fresh females one on the 5th and another on the 6th, but nothing more, but it did not really surprise me that there were so few: the field had been cut and gathered a few weeks previously so it was presumed that had a female deposited before the clover had been cut, the progeny would have been destroyed, or at the best only a few would have survived. The last female taken in fresh condition was kept for laying and was given a square of clover for the purpose. After she had died on 10th October, an examination showed about 36 eggs laid upon the clover and blades of grass. Fertility was certain when the eggs turned a pinkish colour on the 19th and leaden grey later on.

Hatching started on 31st October, moulting 13th November, and they were growing fast on 24th. All this time they were kept in glass



cylinders on a shelf above the kitchen fire; there were thirty fully-fed larvae on 29th, of which all but two had pupated by 1st December, one of which died after turning black, probably with some virus infection. They were divided into three lots on 11th December and given various temperatures; 9 at 37° C., 8 at 30° C. and 10 at -5° C. All those at 30° and 37° emerged within three days; the pupae at -5° were taken from the cold and put into 37° C. on the 15th and by the 18th all had emerged. In all 27 imagines were bred from the various cultures, and all were typical with differences in neither ground colour nor in pattern on either top or underside. Two backward larvae completed development at 37° C. pupated on 16th December and emerged on 20th as typical as the others. It was interesting that the larvae and pupae could withstand the extremes without harm. The sex ratios showed 15 males and 14 females.—C. M. R. PITMAN, Malvern, Southampton Road, Clarendon, Salisbury, Wilts. 23.xii.1959.

*HELIOTHIS ARMIGERA* HUBN. IN KENT.—My friend Mr. W. D. Bowden showed me a fair specimen of *Heliothis armigera* Hubn. which he had taken at mercury vapour light in his garden at St. Peters, Thanet, on 23rd September 1959.—J. M. CHALMERS-HUNT, 70 Chestnut Avenue, West Wickham, Kent. 20.iii.1960.

## The Hydradephaga (Col.) of the Kidwelly District of Carmarthenshire

By ARTHUR PRICE

The Kidwelly district of Carmarthenshire offers a wide range of aquatic habitats, viz., brackish water, fast-running water, slow-flowing ditches, overgrown canals, ponds, and a rain-filled quarry lake.

My visits to these localities have been controlled by the dates of the school holidays and consequently all the work has been done during the periods December/January, March/April, and August/September in 1957/8/9.

The following localities were found to be of great interest:—

### 1. THE QUARRY LAKE, MYNYDD-Y-GARREG (500 FT. ABOVE S.L.)

Eight years ago this quarry was still being worked to provide material for the manufacture of silica bricks, which are used for lining blast furnaces. The quarry has now filled with rain water and supports a very large population of *Gyrinus minutus* F. Also found in the lake are:—

*Laccophilus minutus* L.

*Laccophilus hyalinus* Deg.

*Deronectes elegans* F.

*Deronectes duodecimpustulatus* Ol.

In a trickling stream, which is the overflow of the lake, lives a small colony of *Agabus guttatus* Pk.

## 2. THE CANAL ON THE FLATS—KIDWELLY

This is not an old navigation canal but a canal which has been cut for drainage purposes. It is covered by a mat of *Potamogeton natans* L. whilst the edges are overgrown with *Sparganium ramosum* Huds.

In addition to the bug, *Ranatra linearis* L., the following beetles have been found in this stretch of water:—

*Scarodytes lineatus* F.  
*Hydrovatus clypealis* Sharp.  
*Gyrinus natator* L.  
*Gyrinus marinus* Gyl.  
*Gyrinus caspius* Mén.

## 3. THE TINWORK'S POND—KIDWELLY

Beneath a dam, near the disused tinworks, the River Gwendraeth widens to form a large, deep, and well oxygenated pool. It is oxygenated by the water-fall which forms part of the dam.

One nymph of the dragonfly, *Cordulegaster boltonii* Don., and several nymphs of the stonefly, *Taeniopteryx nebulosa* L., have been found in addition to the following beetles:—

*Oreodytes rivalis* Gyl.  
*Oreodytes septentrionalis* Gyl.  
*Gyrinus urinator* Ill.  
*Orectochilus villosus* Mull.

The following members of the family Dryopidae have also been found under stones in the river:—

*Helichus substriatus* Mull.  
*Elmis maugei* Bed.  
*Latelmis volkmari* Pz.  
*Limnius rivularis* Ros.  
*Esolus parallelopedus* Mull.

## 4. MORFA-UCHAF FERRYSIDE

On 3rd April 1959 a small colony of *Agabus conspersus* Marsh. was found in a brackish pool below the spring high tide mark. This is only the second time that this beetle has been found in Wales. The only other occasion was when Wollaston found it in 1846. This is not where Wollaston found *conspersus*.

All the localities visited were within four miles of Kidwelly Church.

In the systematic list that follows, common is taken to mean widespread, and abundant to mean in good numbers. No. of L. indicates the number of localities in which the species has been taken.

## SYSTEMATIC LIST OF SPECIES.

Species	Habitat	No. of L.	Number
HALIPLIDAE			
<i>Brychius elevatus</i> Pz.	Running water.	2.	Abundant.
<i>Haliphus obliquus</i> F.	Ponds and ditches.	2.	Scarce.
<i>Haliphus fulvus</i> F.	A canal.	1.	Two only.

<i>Haliphus ruficollis</i> Deg.	Common and abund.	
<i>Haliphus fluviatilis</i> Aube.	Running water.	2. Scarce.
<i>Haliphus lineatocollis</i> Marsh.	Common and abund.	

## HYGROBIIDAE

<i>Hygrobia hermanni</i> F.	Cattle ponds and brackish pools.	3. Scarce.
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## DYTISCIDAE

## NOTERINAE

<i>Noterus capricornis</i> Herbst.	Ponds.	2. Abundant.
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## DYTISCINAE

## HYDROPORINI

<i>Hydrovatus clypealis</i> Sharp.	The drainage canal.	1. In fair numbers.
<i>Hyphydrus ovatus</i> L.	Ponds and canals.	2. Abundant.
<i>Hygrotus inaequalis</i> F.	Ponds and ditches.	3. Abundant.
<i>Coelambus confluens</i> F.	Ponds—brackish?	2. Scarce.
<i>Deronectes 12-pustulatus</i> Ol.	Common in running water.	Abundant.
<i>Deronectes elegans</i> F.	Common in running water.	Abundant.
<i>Oreodytes rivalis</i> Gyl.	Running water.	3. Scarce.
<i>Oreodytes septentrionalis</i> Gyl.	Running water.	1. Scarce.
<i>Graptodytes pictus</i> F.	Ditches and swamps.	2. Scarce.
<i>Hydroporus lepidus</i> Ol.	Ditch (slow flowing).	1. Scarce.
<i>Hydroporus angustatus</i> Sturm.	Canals.	2. Abundant.
<i>Hydroporus palustris</i> L.	Common everywhere.	Abundant.
<i>Hydroporus tessellatus</i> Drapiez.	Mossy swamp.	2. Scarce.
<i>Hydroporus erythro- cephalus</i> L.	Common everywhere.	Abundant.
<i>Hydroporus rufifrons</i> Mull.	Castle Moat.	1. Scarce.
<i>Hydroporus gyllenhalii</i> Sch.	Acid ponds & lake.	3. F. abund.
<i>Hydroporus pubescens</i> Gyl.	Common everywhere.	Abundant.
<i>Hydroporus planus</i> F.	Common everywhere.	Abundant.
<i>Hydroporus discretus</i> Fair.	Trickling ditch.	1. F. abund.
<i>Hydroporus nigrita</i> F.	Acid water (500 ft.).	1. Scarce.
<i>Scarodytes lineatus</i> F.	Old Canal.	2. F. abund.

## LACCOPHILINI

<i>Laccophilus minutus</i> L.	Ponds and ditches.	3. Abundant.
<i>Laccophilus hyalinus</i> Deg.	Quarry Lake.	1. F. abund.

## COLYMBETINI

<i>Agabus guttatus</i> Pk.	Trickling streams.	2. Scarce.
<i>Agabus didymus</i> Ol.	Slow-flowing water.	3. Scarce.
<i>Agabus conspersus</i> Marsh.	Brackish pools.	1. Scarce.
<i>Agabus nebulosus</i> Forst.	Brackish pools and a lake.	3. Scarce.

<i>Agabus sturmii</i> Gyl.	Common in fair numbers.	
<i>Agabus chalconatus</i> Pz.	Mossy swamps.	3. F. abund.
<i>Agabus bipustulatus</i> L.	Common everywhere.	Abundant.
<i>Agabus paludosus</i> F.	Slow-flowing water.	3. Scarce.
<i>Platambus maculatus</i> L.	Running water.	3. Abundant.
<i>Ilybius fuliginosus</i> F.	Common everywhere.	Abundant.
<i>Ilybius ater</i> Deg.	Ditches and ponds.	1. Scarce.
<i>Ilybius obscurus</i> Marsh.	Ditches and ponds.	3. Abundant.
<i>Copelatus agilis</i> F.	Old canal.	3. Abundant.
<i>Rantus grapii</i> Gyl.	Old canal.	1. Scarce.
<i>Rantus pulverosus</i> Steph.	Brackish and fresh water.	3. Scarce.
<i>Colymbetes fuscus</i> L.	Lake, ponds and ditches.	4. F. abund.

## DYTISCINI

<i>Dytiscus semisulcatus</i> Mull.	Ditches and ponds.	3. Scarce.
<i>Dytiscus marginalis</i> L.	Ditches and ponds.	5. F. abund.

## GYRINIDAE

<i>Gyrinus minutus</i> F.	A quarry lake.	1. Abundant.
<i>Gyrinus urinator</i> Ill.	Swift-flowing river.	1. Scarce.
<i>Gyrinus caspius</i> Mén.	Brackish pools.	6. Abundant.
<i>Gyrinus natator</i> Gyl.	Common everywhere.	Abundant.
<i>Gyrinus marinus</i> Gyl.	Old canal.	2. Abundant.

Some of the material for this article is reproduced with the permission of the Editor of *Nature In Wales*.

Thanks are due to Mr. J. Balfour-Browne of the British Museum for his help in the identification of specimens.

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47 Lorne Street, Reading.

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Dr. H. B. D. Kettlewell informs me that there is a vacancy in the Department of Genetics for an assistant to breed lepidoptera. He tells me that this is a permanent post involving a five and a half day week, and he will be pleased to hear from any reader who may be interested. Applications should be addressed to Dr. H. B. D. Kettlewell, Department of Genetics, Hope Department, Natural History Museum, Oxford.—Ed.

Pages 101-108 have been removed and will be found as pages 9-16 of J. M. Chalmers-Hunt's "Buterflies and moths of Kent: a critical account, volume 1: Rhopalocera" which is separately bound.

See Appendix 100-100-100-100  
To 100-100-100-100-100-100  
100-100-100-100-100-100  
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**For Sale.**—New aberrations of *A. caja*. Coloured photo on request. R. G. Todd,  
West Runton, Norfolk.

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# THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

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# A Fortnight's Collecting in the Swiss Alps

(July 1959)

By C. G. M. DE WORMS, M.A., Ph.D., F.L.S., F.R.E.S.

Probably no country on the mainland of Europe has had its lepidoptera so much studied or written about as Switzerland. But most of this so far as the British literature is concerned was at the end of the last century and beginning of the present one when such famous collectors as J. W. Tutt, the Rev. George Wheeler and Rowland Brown carried out annual expeditions in search of new places and species and then gave detailed narratives of their several exploits. Though this grand country has been visited any number of times in more recent years by British field collectors, little seems to have appeared in print of their efforts with the net in these alpine regions and, what is more, so much of that country has changed as regards means of communication that quite a lot of the more mountainous localities have now become relatively accessible. One of these is certainly Saas Fee, which I visited at the end of July 1959. It is not long since it was only to be reached by a mule track from the station at Stalden on the Zermatt railway and then there was a steep uphill journey of over 20 miles. Not until some five years ago was it directly accessible by car when a motor road was constructed to climb the last 1,000 ft. from Saas Grund where a road had been built up the very tortuous and steep valley.

Accordingly, I set out on 20th July and, travelling overland by the Basle-Lotschberg route, reached Brig early next morning when the thermometer registered 87° F. in the shade. As I left the station there a *Euvanesa antiopa* L. flitted over my head, a good omen. I went on at once by the narrow gauge railway to Stalden and thence took the Post-auto up the winding narrow road to Saas Grund. The road was being widened and at several spots passing other vehicles meant balancing on the edge of a precipice several hundred feet deep. We reached Saas Fee by lunchtime. It is a most attractive spot situated at just 6,000 ft. in the bowl at the foot of the great Mischabel massif with the great snowclad summit of the Alphubel in the centre and to the right the twin peaks of the Dome, the highest mountain in Switzerland, towering to just over 15,000 ft. In spite of this glorious scenery and weather the chief drawback was the popularity of the resort for hundreds of holidaymakers now that it can be readily gained by car and this at times made collecting quite embarrassing.

As in many other parts the season was early and most of the hay harvest had already been carried, but a few pieces of meadow were still extant and I found one of these patches on the banks of the local river that afternoon alive with lepidoptera. The commonest species were *Lycaena virgaurea* L., *L. hippothoë* L. with some very dark females, *Lysandra coridon* Poda males, large numbers of *Cupido minimus* Fuessly, while the Erebias were represented by *E. melampus* Fuessly and a few worn female *E. ceto* Hbn. and *E. euryale* Esp. together with *Coenonympha satyrior* Esp. *Pieris napi* L. and *P. rapae* L. were everywhere. The next morning I set out early again in full sunshine

to work the large larch wood which borders the foot of the two tongues of the great glacier which has receded quite a mile in the last 40 years at which time it was linked up just above the larch wood where a small lake and eroded cliffs are formed now. I found the wood again full of butterflies, the commonest of which was *Erebia goante* Esp. which was flitting about among the small rocks on which it was in the habit of settling. In this area were also flying a good many *Colias phicomene* Esp., *Erebia tyndarus* Esp. in hundreds, a few *Argynnis niobe* L. with *Epinephele lycaon* Rott. and *Hesperia comma* L. The next morning, equally fine as the 23rd, I revisited this area, but penetrated slightly higher towards the main mountain face where plenty was on the wing, mostly the same species as on the previous day, but with the addition of female *Erebia epiphron* Knoch, *Pararge maera* L. a very large form, *Melitaea varia* Bisch., *Aricia agestis* Schiff. *Plebeius argus* L., *Lysandra coridon* Poda, *Cyaniris semiargus* Rott., *Polyommatus icarus* Rott., and *Hesperia armoricanus* Oberthür. That afternoon I explored the ground along the wooded winding road downhill towards Saas Almagell. Here I found a meadow with the grass still long which was my venue for the two mornings, both very fine and warm. The whole area of a few acres was dancing with butterflies. The flowers, especially the tansy, were most attractive and on a bunch of the latter were feeding many pairs of *Lycaena virgaureae* L. with very dusky females. The Blues were well represented by *Lycæides idas* L. and *Aricia donzelii* Bdv. *Erebia melampus* Fuessly and *E. goante* Esp. were flitting everywhere, while an occasional worn female *Parnassius apollo* L. sailed across, together with a few tattered *Argynnis amathusia* Esp. *Adopaea lineola* Ochs. was in abundance with a few *Hesperia alveus* Hbn. while geometers were also in quantity, mainly *Odezia atrata* L., the golden *Crocota lutearia* F. and the tiny *Sterrhæ flaveolaria* Hbn. The Zygaenas were mainly a large form of *Z. trifolii* Esp. which were specially prevalent on an afternoon walk to the Fletshorn hotel situated in the woods north of Saas Fee.

A téléferique cable railway ran from Saas Fee to a small restaurant known as Spielboden, situated on a grassy promontory flanked by each arm of the glacier. In about a 20-minute run it landed you at a height of just 8,000 ft. This was my hunting ground on the morning of 26th July and I spent the afternoon walking down along the zigzag path. Just round the restaurant the short grassy slopes were very productive. *Boloria pales* L. was skimming everywhere over the ground and on a shale slope by the summit of the railway I spotted a number of *Pontia callidice* Esp. disporting themselves on cruciferous flowers, always just out of reach, though eventually I took some of both sexes. *Erebia tyndarus* Esp. was in great profusion, accompanied by another faster-flying species which turned out to be *Erebia mnestra* Esp. of which I took a fresh series. There were also a few *E. lappona* Esp. with some very well-marked females. On a grassy ridge at about 7,000 ft. on the way down and I found *Lysandra eros* Ochs. flying with a lot of *Colias phicomene* Esp.

I set out early in 27th July in brilliant sunshine by the 'bus for Stalden near which I saw a good many *Satyrus alcyone* W.V. flying along the roadside. I took a train for Zermatt and immediately another one up the famous rack railway to the Gornergrat where, under ideal

conditions, there was a magnificent view of the huge peak of the Matterhorn in one direction and that of Monte Rosa and several other peaks in the opposite one. But it was very cool at this altitude of 10,000 ft., so I descended after a short interval by train to the station at Riffelberg at about 8,500 ft. I found the extensive grassy slopes alive with lepidoptera, the most remarkable of which was *Zygaena exulans* Hoch. in thousands making almost a carpet. It was difficult not to tread on them. The main Nymphaline was *Boloria napaea* Hbn., some fine dark females, but there were a few *Euphydryas cynthia* W.V. flying, all very worn, together with an occasional *E. merope* De Prunner and *Melitaea varia* Bisch. Besides the inevitable *Erebia tyndarus* Esp. and some *E. lappona* Esp. a small species turned out to be a very dark form of *E. epiphron* Knoch. The only Lycaenid was a dark form of *Agriades orbitulus* De Prunner. I spent my last day at Saas Fee again at Spielboden where I added to my series of most of the insects I had seen on the earlier visit. Nearly all the nettles in that region had been eaten down by the larvae of *Aglais urticae* L. which were in huge numbers.

On the suggestion of the eminent authority Mr. B. C. Warren, I spent the end of my trip at Gletsch, travelling there on 28th July by rail from Brig by the very picturesque line to Andermatt. My headquarters was the very comfortable Hotel de Glacier du Rhone, just at 6,000 ft., situated at the junction of the famous Grimsel and Furka Passes. In the background was the great Rhone Glacier which, like that at Saas Fee, had gone back at least a mile in the past 70 years leaving a wide valley which was the scene of most of my collecting during the next few days. I set to work that afternoon along a rough path crossing the railway and leading through some dense alder bushes. On the many flowers, including the fine large red gentian, were many *Lycaena virgaureae* L., *L. hippothoe* L., *Boloria pales* L., *B. napaea* Hbn., and *Cyaniris semiargus* Rott. The next morning I revisited this spot which Mr Warren had told me was a noted one for the very local *Erebia eriphyle* Freyer. Fortunately the sun came out as I arrived and I netted an *Erebia* which turned out to be this species and soon obtained a good many more together with several females. They looked appreciably larger than *E. melampus* which was also flying there and seemed to appear singly and then soon to disappear among the thick growth of alder on the leaves of which they are wont to alight. On the last day of the month I went by train to Andermatt, but the only insects I saw in the rather dull conditions were late *Erebia euryale* Esp. and *E. melampus* Fuessly. August opened with the only two wet days I experienced. On the 1st I travelled over the Grimsel Pass to the Hospiz on the edge of the huge artificial lake made by a great dam there, but nothing was on the wing, while the following day I went by Post-auto to the summit of the Furka Pass at 8,000 ft., but again cloudy conditions precluded any collecting. However, the morning of the 3rd proved very fine and, although I was due to leave that day, I spent an hour at 8.30 a.m. near the slope behind the hotel where many insects were on the wing, chiefly the two Coppers, a lot of *Erebia melampus* Fuessly, mostly in fine order, and several rather larger *Erebias* of which I took one which proved to be *E. pronoe* Esp., just appearing. I travelled back to Brig later that morning and then passing through the Lotschberg Tunnel again I broke my journey for a few hours at Kandersteg, where I worked

the lower pinewoods in rather dull conditions. However, some very fine *Erebia ligea* L. with very big females were haunting this zone with some late *E. euryale* Esp. and worn *E. aethiops* Esp. It was curious to see *Lysandra coridon* Poda in this type of terrain. My last capture was a male *Argynnis aglaia* L. with the pearl marking beautifully rayed. It was in perfect order, a good finale to a most enjoyable and successful trip. I later took the train to Basle and completed the night journey to England.

Three Oaks, Woking. November, 1959.

## A Week in the Isle of Arran

By AUSTIN RICHARDSON, M.A., F.R.E.S.

There have been none too many entomological references to Arran since the passing of the old Glasgow collectors, who used to visit it regularly. This is a pity, and anyone who enjoys collecting amid wonderful Highland scenery cannot do better than spend a holiday, long or short, in this lovely and entomologically exciting island, where everything is on the grand scale.

I had long promised myself the opportunity of seeing *Dysstroma truncata* ssp. *concinata* on its native rocks, especially as its usual time of emergence seemed likely to fit in well with a schoolmaster's holiday. I was, however, quite unprepared for the wealth and variety of the incidental species which we came across along with our main objective. In Arran one finds Highland species, such as *Apamea assimilis*, *Aporophila lutulenta* abs. *sedii* and *luneburgensis*, and *Oporinia filigrammaria* alongside of southern and coastal things like *Pararge aegeria*, *Thecla quercus*, *Cryphia perla*, *Euxoa obelisca*, *Apamea ophiogramma*, and *Lygris prunata*. If one gets tired of collecting, one can climb a mountain, of which, in addition to Goat Fell, there are several of over 2,500 ft., drive round the excellent roads, or visit Brodick Castle, once the home of the Montrose family, but now with most of the Goat Fell the property of the Nation. Every house has mains electricity, 240 volts. a.c., so that traps present no difficulty, and the views across to the Ayrshire coast on the east, to Kintyre on the west, or to Ailsa Craig on the south are superb.

Time and again I had postponed this particular holiday, mainly because I had no knowledge of where to go or where to stay. All I knew was that *D. concinnata* inhabited ground above 400 ft. So I wrote to the Town Clerk at Brodick, a place to be avoided unless one likes one's fellows in the mass, and told him that I would like accommodation, preferably with mains electricity, up on a hill, and out of a town. I received by return a list of likely addresses, many with telephone numbers, and put through two calls in April. On the second I struck lucky, how lucky I was not to know until August. In the event, I found myself in a croft, on a hill 300 ft. up, looking across at Kintyre, with bath (h. and c.), mains electricity, television, and typical Scottish fare and hospitality, all for 17s. a day, plus a shilling for the trap. I

also ran another trap in someone else's garden at sea level, and was amazed at the numbers to be gone through each morning.

The people of Arran lay themselves out for tourists and the s.s. Glen Sannox which leaves Ardrossan twice daily has a whole deck given over to cars and sheep—it can hold seventy of the former—an hydraulic lift, and two turntables. The island roads are good and extensive, and I covered 400 miles in my week.

To return to *D. concinnata*, the expedition's *raison d'être*, I had no idea where to go but, being naturally lazy, had armed myself with an Ordnance Survey map, from which I saw that three roads rose to an altitude of 600 ft. or over. On our first morning, 6th August, we tried one of these, and on the very first rock, at 11.30 a.m., my wife spotted a fine freshly-emerged *D. concinnata*. Greatly encouraged, for we had been afraid that in such an early season the beast might be over, we kept at it. By lunchtime we had found no more at all and so after lunch we went into Brodick to do some shopping. Later in the afternoon we took our tea to another of the island passes. Here we found or disturbed another half dozen, some on rocks, some in the heather, and decided that this would be the place to visit with our generator that night. This we did, and found *D. concinnata* flying freely at dusk, along with lovely moorland forms of *Hydriomena furcata*, *Lygris testata*, *L. populata* and others, many of the *concinnata* sitting paired on the heather. Later on a few came in to m.v. light but a fairly strong wind discouraged much, except for the ubiquitous Antler Moths and a few *Celaena haworthii*, and we packed up early, well content. Next day we tried yet another pass and here had more success on the rock faces, the moths being very fresh, varied, and difficult to see though not to photograph. Evidently we had struck a strong emergence. Eventually we found the moth everywhere we went at all altitudes of 500 ft. or upwards. They seem to prefer fair-sized rocks but may be found on quite small ones, and quite often when chasing a disturbed specimen one would knock up another in the heather. I kept three or four females for ova and all laid freely in pillboxes and at the time of writing, iii.60, I have small larvae of the third generation feeding well on strawberry. They start well in tin pillboxes but after a week or two seem to do better on potted plants. Typical *D. truncata* were also taken in small numbers at low altitudes.

Needless to say we saw no traces of the Arran Brown, but in my opinion *Erebia aethiops* more than deserves this name itself. Never have I seen such clouds of this butterfly, or in fact any butterfly except migrant Whites, as we came across in one or two localities. Of *Coenonympha davus* we saw no sign. It surely must occur here but was probably over in this warm locality: palms grow freely in several places in the island. *Erebia epiphron* we did not see either, but this is less likely to be present.

After a little rain on our first morning we struck a wonderfully fine week. From a photographic point of view, many of the distant views were clouded by haze, but our last day, 12th August, dawned crystal clear and we had to motor hectically round photographing everything we had already taken. The coast of Northern Ireland, 45 miles away, showed clearly beyond the Mull of Kintyre and was duly taken with a 9 cm. lens. I append a list of 141 species seen or taken during our stay. This figure might have been increased if we had done any woodland

collecting, but preference took us always to the moorlands; sugar also was largely unproductive. So ended a week we shall always remember.

## PAPILIONES

<i>Pieris brassicae</i> L.	<i>Erebia aethiops</i> Esp.
<i>P. rapae</i> L.	<i>Maniola jurtina</i> L.
<i>P. napi</i> L.	<i>Coenonympha pamphilus</i> L.
<i>Aglais urticae</i> L.	<i>Thecla quercus</i> L.
<i>Nymphalis io</i> L.	<i>Lycaena phlaeas</i> L.
<i>Pararge aegeria</i> L.	<i>Polyommatus icarus</i> Rott.
<i>Eumenis semele</i> L.	

## BOMBYCES

<i>Pheosia tremula</i> Clerck	<i>Thyatira batis</i> L.
<i>P. gnoma</i> F.	<i>Lasiocampa quercus</i> L.
<i>Notodonta ziczac</i> L.	* <i>Macrothylacia rubi</i> L.
<i>N. dromedarius</i> L.	<i>Drepana lacertinaria</i> L.
<i>Lophopteryx capucina</i> L.	* <i>Spilosoma lubricipeda</i> L.
<i>Habrosyne detersa</i> L.	<i>Phragmatobia fuliginosa</i> L.

## AGROTIDES

<i>Apatele rumicis</i> L.	<i>Ceramica pisi</i> L.
<i>Cryphia perla</i> F.	<i>Diataraxia oleracea</i> L.
<i>Agrotis segetum</i> Schiff.	<i>Hadena trifolii</i> Rott.
<i>A. vestigialis</i> Rott.	<i>H. conspersa</i> Esp.
<i>A. ipsilon</i> Rott.	<i>H. bicruris</i> Hufn.
<i>Euxoa nigricans</i> L.	<i>Tholera cespitis</i> F.
<i>E. tritici</i> L.	<i>Cerapteryx graminis</i> L.
<i>E. obeliscus</i> Hübn.	<i>Bombycia viminalis</i> F.
<i>Lycophotia varia</i> Vill.	<i>Luperina testacea</i> Schiff.
<i>Actebia praecox</i> L.	<i>Procus literosa</i> Haw.
<i>Peridroma porphyrea</i> Schiff.	<i>Apamea assimilis</i> Doubl.
<i>Amathes agathina</i> Dup.	<i>A. obscura</i> Haw.
<i>A. castanea</i> Esp. (grey form)	<i>A. secalis</i> L.
<i>A. baja</i> F.	<i>A. ophiogramma</i> Esp.
<i>A. c-nigrum</i> L.	<i>A. crenata</i> Hufn.
<i>A. ditrapezium</i> Borkh.	<i>A. lithoxylea</i> F.
<i>A. xanthographa</i> F.	<i>A. monoglypha</i> Hufn.
<i>Diarsia brunnea</i> F.	<i>Aporophila lutulenta</i> Borkh., abs.
<i>D. festiva</i> Schiff., ssp. <i>conflua</i> Treits.	sedi Guen. and <i>luneburgensis</i> Freyer
<i>D. dahlia</i> Hübn.	<i>Antitype chi</i> L.
<i>D. rubi</i> View.	<i>Euplexia lucipara</i> L.
<i>Ochropleura plecta</i> L.	<i>Phlogophora meticulosa</i> L.
<i>Axylia putris</i> L.	<i>Celaena haworthii</i> Curt.
<i>Triphaena comes</i> Hübn. (some ab. <i>rufa</i> Tutt)	<i>C. leucostigma</i> Hübn.
<i>T. pronuba</i> L.	<i>Hydraecia oculea</i> L.
<i>T. ianthina</i> Esp.	<i>H. lucens</i> Freyer
<i>Lampra fimbriata</i> Schreb.	<i>H. micacea</i> Esp.
<i>Mamestra brassicae</i> L.	<i>Arenostola pygmaea</i> Haw.



*Leucania pallens* L.  
*L. impura* Hübn.  
*L. lithargyria* Esp.  
*L. conigera* F.  
*Stilbia anomala* Haw.  
*Caradrina clavipalpis* Scop.  
*Amphipyra pyramidea* L.  
*A. tragopoginis* L.  
*Cosmia trapezina* L.

*Cirrha icteritia* Hufn.  
*Anarta myrtilli* L.  
*Plusia chrysis* L.  
*P. bractea* F.  
*P. festucae* L.  
*P. pulchrina* Haw.  
*P. gamma* L.  
*P. interrogationis* L.  
*Hypena proboscidalis* L.

## GEOMETRIDES

*Pseudoterpna pruinata* Hufn.  
*Sterrha aversata* L.  
*S. biselata* Hufn.  
*Calothysanis amata* L.  
*Anaitis plagiata* L.  
*Ecliptopera silaceata* Schiff.  
*Lygris prunata* L.  
*L. testata* L.  
*L. populata* L.  
*L. pyraliata* Schiff.  
*Dysstroma truncata* Hufn.  
*D. truncata*  
     ssp. *concinna* Steph.  
*D. citrata* L.  
*Thera obeliscata* Hübn.  
*Xanthorhoe ferrugata* Clerck,  
     nec Hübn.  
*X. fluctuata* L.  
*Colostygia pectinataria* Knoch  
*C. salicata* Hübn.  
*C. didymata* L.

*Oporinia filigrammaria* H.-S.  
*Entephria caesiata* Schiff.  
*Epirrhoe alternata* Mull.  
*Euphyia bilineata* L.  
*Lyncometra ocellata* L.  
*Perizoma bifasciata* Haw.  
*Hydriomena furcata* Thunb.  
*Eupithecia goossensiata* Mab.  
*E. albipunctata* Haw.  
*E. virgaureata* Doubt.  
*E. icterata* Vill.  
*E. nanata* Hübn.  
*Gymnoscelis pumilata* Hübn.  
*Gnophos myrtillata* Thunb.  
*Cabera pusaria* L.  
*Chiasmia clathrata* L.  
*Selenia bilunaria* Esp.  
*Crocallis elingvaria* L.  
*Opisthograptis luteolata* L.  
*Cleora jubata* Thunb.  
*Ematurga atomaria* L.

## HEPIALIDAE

*Hepialus sylvina* L.

\*Larval stage only.

# Recollections of Breeding *Diacrisia sannio* Linn.

By BRIAN O. C. GARDINER

Reading Mr. Symes' article in the *March Record* (antea, p. 60) brought back to mind my own experience of breeding this species some years ago. Unlike Mr. Symes and his friends I found it very easy to rear and it was not long before vast numbers of larvae became such an embarrassment I had to start destroying them. I lay no claim to having a way with difficult species, since it is my experience, and that of my friends, that what one man finds easy another finds difficult, and *vice versa*.

My first encounter with *sannio* was at Barton Mills in 1947 when I took a number of males at a Tilley light. My second encounter was abroad, near Copenhagen, Denmark, in July 1949. In a small locality

both male and female swarmed in about equal numbers. Never, before or since, have I seen such a profusion of Lepidoptera. It was virtually impossible to catch one insect at a time. A stroke with the net would include a couple of Fritillary species (*Melitaea ino* and *M. dictynna*), a Blue or Copper, almost certainly a Ringlet (*Aphantopus hyperantus*) and, as like as not, a *sannio* or Burnet moth. At every step moths and butterflies were put up from underfoot to take a short flight before settling again. Amongst other specimens selected from this multitude, three female *sannio* were put into pillboxes and the eggs laid by these brought back to this country.

The newly-hatched larvae were kept in glass-topped metal tins during the first instar and were then transferred to muslin-covered cages. Now it is my policy when dealing with hibernating larvae to do everything possible to prevent hibernation taking place. In most cases the application of heat and light works well. I regard light as being of more importance than heat, but it is a curious fact that total darkness (except for the few minutes each day spent feeding the larvae) may have the same effect as an extended light period in preventing hibernation. My *sannio* larvae were kept lighted for a minimum period of 18 hours per day in a heated greenhouse kept between 20-25° C. The light was supplied by fluorescent tube operated by a time switch, so adjusted that daylight plus artificial light was on the larvae for 18 hours out of 24. The light was brought on about half an hour before dusk so that there was no break in the continuity—an important point. I should like to add here that a time switch is not essential for rearing larvae under such conditions as I have obtained equally good results by hand switching, putting the light off just before retiring for the night. Tungsten bulbs are as effective as fluorescent, their disadvantage being that each cage really requires a separate bulb. Also they do not last as long.

Under these conditions, being fed on a mixture of Dandelion, Plantain and Ragwort, the *sannio* larvae fed up within a few weeks and by the middle of September I had nearly 200 adults emerged. About half these were killed, but it was not long before the remaining fifty females had plastered the muslin sides of the cage with some thousands of eggs.

One is always able to be wise after the event and I now regret that I did not keep any accurate records of the times taken by the various stages of the life cycle to complete their development; nor did I keep any record of the mortality, but from the numbers of adults obtained this cannot have been very great.

It is perhaps pertinent here to give some account of my method of feeding the larvae. When one has a couple of hundred or more larvae to look after, the fiddle of putting the food into water to keep it fresh becomes too time consuming, this applying particularly to low plant feeders rather than tree feeders. My method, which has been successful with many other larvae besides *sannio*, is to throw fresh leaves in daily. With experience it is possible to judge how much will be eaten without too much waste. Frass and debris is allowed to accumulate on the floor of the cage which is covered with peat. No attempt is made to transfer larvae to the fresh food; they do this readily enough by themselves and with *sannio* a fair percentage were

resting on the cage walls anyway. This method does undoubtedly lead to the squashing and burying of a few of the larvae, something I regard as being of advantage since diseased and laggard feeders are thus put out of harms way without the trouble of sorting them out individually. The saving of individuals is not important, when dealing with large numbers of larvae, as it would be if only a handful were being reared. When the larvae are nearly fullgrown the cage is cleaned out. At this stage they are easy to sort out from the debris and I find clean jamjars will temporarily contain these and other active Arctiid larvae.

For the second generation a quantity of larvae were collected by putting a potted Dandelion plant in the cage containing the mass of eggs. These were fed up as has just been described, numbers being killed off from time to time as the food position became more acute with the approach of winter in order to keep the brood within reasonable proportions. By Christmas moths of the third generation were emerging and at this point the stock was destroyed since I had satisfied myself that this species could be continuously brooded and other species were by then making demands on time and cage-space.

Now although this was a Danish stock, the life cycle is similar to our own and I can see no reason why British *sannio* should not respond in the same way as this stock did and give a succession of generations when reared under the right conditions. I recommend heat and light to anyone obtaining eggs. It should be noted, however, that once the larvae have entered hibernation only a prolonged exposure to cold will induce them to come out of it and the same probably applies to any larvae found feeding in the field.

43 Woodlark Road, Cambridge.

## Some Observations on Rearing *Diacrisia sannio* Linn.

By M. J. LEECH

Mr. H. Symes, in his interesting article in March's *Record* (72: 60) on *D. sannio* remarked that it would have been interesting to have some details on how I bred 41 *sannio* from the egg last summer.

Last year was the first time I had the opportunity of rearing *sannio*. The insect does not occur locally; it is, however, common at Witherslack and, as Mr. Symes remarks, is still to be found locally but uncommonly at Delamere Forest or at least what is left of this once famous locality.

As stated in my previous note (71: 268) a series of *sannio* was taken on the 20th June last year at Witherslack. The ratio of the sexes was five females to eight males. It was a glorious summer day and it was decidedly hot work netting the males. The females, always more lethargic, were easier to secure, in fact two of the five were found at rest on the heather. Insects generally were in profusion and some nice forms of *Scopula ternata* Schr. were captured. In addition, *Perconia strigillaria* Hb. was abundant but I only saw and netted two specimens of *Sterrha muricata* Hufn.

However, to return to *sannio*. The five females hardly ranked as cabinet specimens, so they were all kept in pill boxes for eggs. Batches of ova commenced to appear next day and these were added to on the next two succeeding days. All the batches laid proved to be fertile. When the larvae hatched (the first batch commenced on the 28th June) they were transferred to glass topped tins and given a diet of dandelion and chickweed. There were soon signs of obvious eating but the foodplants were not attacked with any voracity and I wondered at the time whether an alternative should be introduced. As bog myrtle occurs extensively on the Witherslack Mosses I thought that this may be the pabulum they might eat in a state of nature. Fortunately this plant occurs locally on Formby Moss so sprigs of it were introduced. The dandelion and chickweed were also retained. Results were not altogether satisfactory as the larvae did not show exclusive interest in this new addition to their diet. There was only the odd death, however, and I kept up the mixed foodplant technique until it was time to transfer the larvae from the tins to the breeding cages. I gave a lot of larvae away but was still left with rather formidable numbers.

It is interesting to note that Mr. Symes in his article refers to a method adopted successfully by his friend Mr. P. Cue in which heather was used at the bottom of the containers. This was almost exactly what I did. In each cage a carpet of fresh heather and dried grass was placed on the bottom as this, in captivity, resembled as near as possible the type of habitat in which the larvae must occur at Witherslack. Some leaves of dandelion (bog myrtle and chickweed now discontinued) were placed on top of the heather and grass mixture but the bulk of the foodplant was placed in jars in an upright position. When the jar was put into the cage the lip was approximately level with the heather.

As fairly large quantities of dandelion were being supplied each day the readily available stock soon became exhausted and a new plant was introduced, namely broad-leaved plantain. They took to the plantain very well, although some dandelion was supplied up to the end. It is I think important to renew the foodplant daily as the frass, when fed on this diet, is rather moist and does not readily fall to the bottom of the cage.

The larvae were kept indoors in an unheated room. On pupation they spun their cocoons amongst the heather and grass; some also spun up in the corners of the cages.

As I said in my earlier note, the vast majority grew slowly and went into hibernation at about the time the second brood specimens emerged, in other words when they were roughly a quarter to one-third grown. Hibernation in captivity has been more than they could stand as they have all died during the winter.

Finally, I must thank Mr. Symes for his kind remarks but again must stress that it was the considerable numbers together with the remarkably warm weather which was obviously beneficial towards the production of a partial second brood of this insect.

"The Spinney", Freshfield Road, Formby, Lancs. 26.iii.60.

## A note on breeding *Diacrisia sannio* Linn.

By L. G. F. WADDINGTON

Mr. H. Symes' article on the rearing of *Diacrisia sannio* was of particular interest to me in view of the fact that I have only caught one female *sannio* in my life, and succeeded in obtaining a fair series without much difficulty.

This female I caught on Meathop Moss in North Lancs. in July 1954, and she dutifully laid about 30 ova; the resulting larvae were reared along with a small brood of *caja* larvae on a mixed grill of dock and narrow-leaved plantain (*lanceolata*).

This latter is important in view of the sequel.

The cage was kept indoors on top of a bookcase in the living room, which was heated by a stand-off coke stove, and which was kept in night and day.

The bulk of the larvae fed up pretty rapidly and as time went on the foodplant was *lanceolata* exclusively as it was the easiest for me to obtain.

Seventeen of the *sannio* pupated and emerged in September, but they were all on the small side—appreciably smaller than the wild ones caught in July.

Most of the *caja* continued to feed up and I got a nice emergence in December.

Two of the *sannio*, however, resolutely refused to feed up, taking their cue from some of the *caja* who were also obstinate.

In my back garden I had a tub planted with three *lanceolata*, so I contained these plants with a galvanised cylinder 15 in. diameter and about 8 in. deep, and dumped the rebellious larvae inside, but no cover was placed on the top, my feelings being that if they wanted to clear off they could do so; I had as many *sannio* as I wanted.

I would like to point out at this point that *lanceolata* stands winter far better than the broad-leaved variety, and this was exemplified the following year.

During December and January the larvae secreted themselves among the dead leaves, and in February a heavy snowstorm filled the cylinder with snow, and both plants and larvae were completely buried for over a fortnight.

Warm sunshine in March melted the snow, and there was the plantain healthy and upright and in a few days the larvae started to nibble, but, whereas the *caja* gradually absconded, the two *sannio* stayed put, and I eventually brought them indoors and in due course they both pupated, and fine specimens of a male and female emerged in June 1955.

I cultivate both narrow-leaved plantain and Oxford Ragwort in the garden; they are invaluable for rearing *caja*, and the latter is grand diet for the Water Ermine.

9 Greenleaf Avenue, Doncaster.

# Some Old Records of Lepidoptera, and "The Last Apollo seen in England" — an allegation referring to 95 years ago

By P. A. DESMOND LANKTREE, F.R.E.S.

A copy of Tutt's *British Butterflies* (1896) purchased a few years ago was found to hold between its pages a miscellany of enclosures, and amongst these were some newspaper cuttings.

There were three cuttings, marked in writing ink with the yearless dates of September 13, 14 and 15 respectively. The paper appeared to be called simply *The Standard*, and the cuttings comprised a connected series of "Letters to the Editor". It appears from the cutter's dates to have been a Daily, and likely, from the variety of both the correspondents' addresses and the advertisements on the backs, to have been a National and possibly printed in London: perhaps some of the *Ent. Record's* older readers may even recall its later issues. With regard to the year of the cuttings, the first correspondent refers to the year 1859 when later using the words "Thus it will be seen that it is forty years since . . ." which conveniently places it for us at 1899.

The story these letters unfold then, begins with a report from one Mr. F. E. Lowe of the occurrence of considerable numbers of *Lampides boeticus* L. in the Channel Islands in the September of that year (1899). South<sup>1</sup>, publishing his well-known book seven years later, mentions the Channel Islands for this species, but not for that year. However, Dr. C. B. Williams (1930)<sup>2</sup>, reminds us in his thorough work that Lowe published his observations later still in 1899 in the present periodical, and states:

With regard to the 1899 invasion, Lowe (*Ent. Rec.*, xi, 1899, p. 304) says, "The event of the year was the abundance of *L. boetica* from 1st to 15th September, after which the wind and colder weather seem to have destroyed them. Somewhat over one hundred specimens have been captured in the islands (Guernsey), and I could have captured at least fifty more in my garden".

Dr. Williams quotes Tutt (*Brit. Lep.*, ix, pp. 366 and 374) as giving Channel Island records for this species for the years 1859, 1872, 1889, 1892, 1899, 1900 and 1904, and adds:

Tutt (*l.c.*), speaking of the invasions in 1899, 1900 and 1904, says that several examples in July gave rise to home-bred broods in September and October\*.

As Mr. Lowe's observations in this periodical thus gained a further airing from Dr. Williams, it might at first seem superfluous to refer to his earlier account in *The Standard*, but, as mentioned previously, this was only the beginning of a story, and, as it happens, of rather a different kind.

Lowe's letter drew sharp criticism for over-collecting from two correspondents, one of whom, a Mr. Terry, in the course of propounding his indignation, gives a record of sighting a specimen of *Parnassius apollo* L. off the southern shores of England in 1865. His generosity is not limited to this record however, but is extended to offer some re-

\*which, as will be seen later, explains the number of specimens which Mr. Lowe found so "perplexing".

markable statements on the British occurrence and larval food of this species which do not appear to have found parallel among the observations of other British entomologists before, or for that matter, since. To one, Mr. Snowden, this appears to have been an extravagance which overwhelmed him into becoming a correspondent on the subject himself, but whose letter is unfortunately not preserved among the cuttings found. From the final cutting however, which is of Mr. Terry's reply, one may guess that Mr. Snowden evidently first came to Mr. Lowe's defence, and then questioned the accuracy of Mr. Terry's identification on the grounds already suggested.

If, in this final letter, Mr. Terry retracts something of his remarks concerning the distribution and life history of the species, he insists upon his record of its occurrence, and with this, were he aware of it, perhaps only a certain boatman could have chosen to disagree.

The occurrence of such a specimen in the stated year and place, which after all is literally not an impossibility, is not of concern here, only the occurrence of the record. As no mention of this appears among the twenty citations listed by Messrs. Morley and Chalmers-Hunt in their recent article on the species (*Ent. Rec.*, lxxi, 1959, pp. 273-276), possibly because of its long obscurity among old editions of the popular Press, and as the heat which seems to have been generated under the collars of the correspondents does nothing to detract from the liveliness of their writing, their letters are thought to be worth giving verbatim. Before doing so though, perhaps one more thing should be mentioned. If the cutter's inked dates of 13th and 14th September are correct on the first two cuttings, then Mr. Terry's first letter appeared on the 14th. As Mr. Snowden must have read this before he could reply to it, his reply must have been printed on the 15th. Similarly, Mr. Terry's reply to Mr. Snowden, ink-dated (one might suspect in error) the 15th, surely appeared on the 16th: perhaps, if Mr. Snowden's missing letter formed a fourth cutting about the size of that bearing Mr. Terry's reply, it, too, bore an inadvertently erroneous ink date for the 16th?

Anyway, here are the letters which, despite the errors suggested, have been retained under the cutter's respective ink dates:

*13th September (ink).*

Sir,—Because it should interest others than “mere collectors” of butterflies, I venture to ask a corner in your paper to record the remarkable abundance of the “long-tailed blue” in Guernsey. Its headquarters appear to be in my own garden on the outskirts of the town. Here I have taken for myself, or friends, over eighty specimens, besides others which have been given their liberty again. On September 1 took eleven, including two females, and daily since I have taken some. On September 4, I netted thirty-three specimens in all. This species is very rare in Northern and Central Europe, though not uncommon on the Mediterranean coast and Asia, extending to Australia and the Cape. Its sudden appearance, therefore, in numbers in this little spot, in spite of its reputed tendencies for migration, is very perplexing. Messrs. Newman and Tutt, in their respective “Histories of British Butterflies”, quoting evidently the same authority, say, “In 1859 the species was abundant in the Channel Islands”. Perhaps this refers

to Jersey, but as to Guernsey, I believe the facts are these. In 1859 Miss Renouf took eight specimens of *L. boetica*, and one more in August, 1872. The next recorded capture is one by myself in this same garden, on September 15, 1892. About two years earlier, a schoolboy is reported also to have taken a battered specimen on the sea coast.

Thus it will be seen that it is forty years since more than one specimen has been taken in the same season in this Island, and now they are to be had *ad lib*.

I am, Sir, your obedient servant,

FRANK E. LOWE, F.E.S.

St. Stephen's Vicarage, Guernsey. September 8.

14th September (ink).

Sir,—From a letter in *The Standard* of to-day, I gather that the Rev. Frank E. Lowe is to be congratulated on his good fortune, for his vicarage garden in Guernsey appears to be the headquarters of the "long-tailed blue", over eighty specimens of this rare but all too confiding butterfly having been netted by our energetic informant during the last few days.

In this period of complaint about diminished incomes, it is pleasing to note that someone has an opportunity for increasing his official emoluments; and the zeal for extermination with which Mr. Lowe is fired, justifies me in suggesting that both by art and nature he is eminently qualified to set up a "corner" in long-tailed blues.

I am, Sir, your obedient servant,

T. LLOYD DAVIS.

Gunnersbury. September 12.

(Same cutting.)

Sir,—Your Correspondent, a clergyman, the Rev. F. E. Lowe, writes with great complacency of having destroyed eighty specimens of a rare butterfly. It seems to me that, instead of rushing into print on this subject and so leading others (with about an equal respect for the vital spark in created beings) to destroy the remaining specimens, he should think quietly over this wanton destruction, and be thoroughly ashamed of himself. It is actions such as his that render any beautiful specimens, whether bird, beast, or insect, extinct. What can exceed in grace and beauty a living humming-bird moth poised on the wing, or darting to fresh flowers; yet the average boy taught by Mr. Lowe would consider such an insect more beautiful in a cabinet with a pin stuck through it.

In 1865, in a boat off Sea View, I saw, for a few moments, resting on the boat, the last specimen of the Apollo butterfly seen in England. I might easily have caught it. I stopped the boatman from doing so. I knew its rarity and wished it to live. This the most beautiful of all our British butterflies, now extinct, was once common in the Isle of Wight, but building operations, and cutting down of the trees and shrubs on which the caterpillars fed made it scarce, and the "bug-hunter" did the rest. How can we expect to get ladies to give up wearing aigrettes because of the destruction of bird life involved, when we have a clergyman boasting of having killed eighty specimens of a rare butterfly—thirty-three in one day. A novel has lately been written,



called "The Lust of Hate". It seems to me what is wanted is a homily, with examples on the lust of destruction.

I am, Sir, your obedient servant,

STEPHEN H. TERRY.

Whitehall Club, Parliament-street, S.W. September 12.

*15th September (ink).*

Sir,—I do not understand your Correspondent, Mr. Snowden's letter. The destruction of eighty rare butterflies—thirty-three in one day—is to any logical mind likely to lead to the extermination of them in the Island of Guernsey; and if I am in Guernsey, and I want to see living butterflies, it does not interest me to hear that they are still not extinct, say, in Switzerland or South America. I may be excused for not knowing the food of the caterpillar of the Apollo butterfly, having never seen the caterpillar, and having only seen one living specimen of the Imago, and that thirty-four years ago. Westwood's "British Butterflies", original edition, with hand-coloured plates, illustrates the insect I saw; but the more recent edition with lithographed plates only refers to it in the text, and does not illustrate it, as it is now extinct in England. As to an authentic instance of the "bug-hunter doing the rest", I was not present at the extinction of the race of Apollo butterflies in England, but whoever caught the last specimen had that proud distinction which Mr. Snowden and Mr. Lowe would evidently have enjoyed.

I am, Sir, your obedient servant,

STEPHEN H. TERRY.

Whitehall Club, Parliament-street, S.W. September 14.

So much for the letters. Before leaving for the moment the subject of *P. apollo* however, since Messrs. Morley and Chalmers-Hunt cite as a record Westwood (1841) quoting Duncan's stating that it had been seen on the west coast of Scotland in the summer of 1834, this seems an opportune place to recall Duncan's own words, not only because he gives his own views on this particular record, but also his own summing up of the standing of this species in relation to the British lists to the time of his writing in 1835<sup>3</sup>. He wrote:

"This insect was first introduced into our British lists, in consequence of it having been supposed, through some mistake, that a few continental specimens in the possession of Lord Seaforth, were procured from the Island of Lewis, one of the Hebrides. Since that time, it has been oftener than once figured and described as a British species; but no authentic instance is on record of its having been observed by anyone—a circumstance which may fairly be assumed, in the case of such a marked and conspicuous object, as a sufficient indication that it is not an inhabitant of this island. We have been assured, however, that it was noticed on the wing last summer in some part of the west coast; and, though inclined to think that this must be a mistake, we willingly avail ourselves of the excuse which it affords for retaining in the mean while such an ornamental insect among our indigenous species. On the Continent, it inhabits the Alps, Cevennes, the mountains of Auvergne, and various parts of Norway and Sweden, in considerable numbers".

Apart from these cuttings, the other enclosures in this book are worth a brief mention in their own right, and consist of the following items:—

1. Two large photographs representing the upper and undersides of a remarkably melanic specimen of *Melanargia galathea* L., but with no details as to its origin.

2. Two records, on a paper slip, of the occurrence of *Maculinea arion* L., in a locality in S. Devon, one on 10th July, 1886, and the other on 9th July, 1887, in the handwriting of the book's former owner. Dr. E. B. Ford (1945)<sup>4</sup>, pointed out, it will be recalled, that the species may be extinct in this area.

3. On another paper slip, six localities in the same hand, but no dates, for *Melitaea athalia* Rott., one being in S.W. Devon, the other five being fairly close together in Central Gloucestershire. Dr. Ford said of Devon, that "a few little known colonies exist" there, and of Gloucestershire, that "ancient records . . . help to bridge the gap between its now isolated western and eastern habitats. Indeed a specimen was taken in a remote part of Gloucestershire within the last few years". As he points out too, "the colonies tend to shift their ground from year to year", but it would be interesting to learn if, in the event of a more sudden and large scale expansion of range, this area of Central Gloucestershire became again included.

4. The postscript to a letter for an unknown recipient (the book's former owner?), but signed E. B. P.—these initials, and the swift enthusiastic writing, Dr. B. M. Hobby of the Hope Dept., of Entomology at Oxford University kindly confirms, are indeed those of the late Hope Professor E. B. Poulton (1856-1943). In this passage, he describes his first capture of *Strymonidia pruni* L. "on privet blossom along the edge of a wood" not such a great distance from Oxford. The late Commander J. J. Walker (1926)<sup>5</sup> mentioned that this very local species was first found in the area in June 1918, but not by E. B. P., and Dr. Hobby agrees that E. B. P.'s letter was probably written about that time. Although the wooded area concerned and others round about have altered much and been greatly thinned in the last forty years, the species may still linger there, and for this reason, the exact locality mentioned is not given here.

Sir Edward Poulton's postscript also mentions Hamm's capture of "an *icarus* pair, ♂ carrying ♀". Mr. A. H. Hamm was a collector of those days whose name figures much in the local records.

5. The last item comprised a cellophane packet in which are still preserved the wings of three butterflies: a specimen each of *Pieris brassicae* L., *Argynnis pales* W.V., and . . . *Parnassius apollo* L.! At first glance, perhaps, a motley assembly, but a moment's reflection will recall their relationship in their being all locally common Alpine species. Each specimen is labelled in the former book-owner's careful handwriting, but the envelope bears the single date 21st January, 1903, an unlikely date for them to have been caught in the wild or captivity-reared simultaneously, and suggesting rather their date of acquisition—perhaps as a souvenir from some London sale room.

The former owner of the book, a fly leaf reveals, was one George Wheeler. While his signature could be checked but hasn't been, it would not be surprising to find it is that of the Rev. G. Wheeler, M.A., who was elected to the Royal Ent. Soc. in 1906, made its Vice-President in 1914, subsequently to serve as its Secretary and on the Council. As

for his interest in *P. apollo*, well, perhaps this was also the G. Wheeler who published a work entitled "The Butterflies of Switzerland and the Alps of Central Europe" some fifty-seven years ago?

Anyway, more information came out of that copy of Tutt's book than its author intended or its buyer expected, but, oddly enough, it's not the first time something like this has happened.

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<sup>2</sup>Williams, C. B. 1930. *The Migration of Butterflies*, 252.  
<sup>3</sup>Duncan, J. 1835. *The Natural History of British Butterflies*, 136.  
<sup>4</sup>Ford, E. B. 1945. *Butterflies*, 126, 133.  
<sup>5</sup>Walker, J. J. 1926. *The Natural History of the Oxford District*, 217-218.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

*EUCOSMA PAUPERANA* Dup.: This moth has been very little known in England for many years, and, to the best of my knowledge, not taken since the early thirties. All the records I have traced have been on the chalk, where it lived amongst wild rose bushes. It is one of my failures amongst the Tortrices; in spite of many searches, I have never seen it alive. I think one of the difficulties in finding it is that it is a rather sensitive insect which refuses to fly excepting on a warm calm afternoon, and as it is on the wing during the last ten days of April, such afternoons are not too common.

In the middle years of the nineteenth century (1840-1870) it was found by several collectors in the Dartford district of Kent, in the chalky lanes leading to Darenth Wood, and also in those round Sutton-at-Hone. It seems for no apparent reason to have disappeared from these localities, and urban development makes it rather unlikely that it will be rediscovered there. Later, in 1891, my old friend B. A. Bower found it commonly on the lower slopes of the downs near Mickleham, Surrey. It continued there for many years; Bower passed the locality on to A. Thurnall, who found it there at intervals until the 1914 war. In 1923, I wrote to Thurnall that I would like a few specimens, and he more than once visited the locality, but failed to find it. Lest it be thought that Thurnall's age was the cause of his failure, I should mention that both Mr. L. T. Ford and myself visited the place more than once with equal lack of success. The locality did not seem to have altered, and the disappearance of the moth seemed inexplicable.

In the early thirties a Cambridge collector took a few specimens on the edge of a chalk cutting in the district between Cambridge and Newmarket. He kindly gave directions to my late friend W. S. Gilles and we tried for the moth in 1935 and 1936 but saw none although one afternoon seemed very favourable. Unfortunately, as Gilles drove me there, I took no particular note of the locality, and owing to his sudden death in 1938 I have now no idea how to find it.

I am convinced that *pauperana* still exists on the chalk in Kent and Surrey: passed to Messrs. Wakely and Chalmers-Hunt.

**LARVAL FOODPLANTS OF TORTRICES:** My recent correspondence with Mr. Carolsfeld Krausé has made me recall some of the changes or pecu-

liarities of food in members of the Tortricina, particularly imported species.

When *Cacoecia pronubana* Hübn. first appeared in this country it was only found on privet (*Ligustrum*). Subsequently it spread to Japanese *Euonymus*, but in the last twenty years, beside feeding on one or two other bushes, it has become a general feeder on herbaceous plants, such as sweet Williams, chrysanthemums, stocks and even house-leeks (*Sempervivum*). Similarly, *Tortrix postvittana* Walk., which for years confined its attentions to *Euonymus*, now feeds freely on red valerian.

In England, *Eucosma solandriana* Linn. is in my experience confined to birch and willow, but in the Burren of Clare it is always found on hazel. It is true that there is no birch on the Burren, but willow is very common.

Another minor mystery is why *Clysia ambiguella* Hübn., which feeds on several foodplants, and is a vine pest abroad, sticks to alder buckthorn here. Fassnidge and I both bred it and netted it from this tree in several places, but found no trace of it on any other.

65 Eastwood Boulevard, Westcliff-on-Sea, Essex.

## Further Notes on Earlier Stages of the Purple Emperor

By I. R. P. HESLOP

(Concluded from p. 91)

I have recorded previously (paper to be published in *Entomologist*, March 1960) this particular instance of a larva hibernating on the leaf. As I write this (February 1960) all the three *iris* larvae which I am bringing through this winter are on leaves, and all well. These include one which from the outset has been kept in natural conditions on a bush outside, without protection of any sort. The other two are on substantial potted plants in large cages in my garage. Two of the larvae are from Wilts, and one from Surrey. Even if the habit is comparatively infrequent now anywhere, perhaps it was normal in the New Forest at the time that Mr. Frohawk described it; there is no doubt that the species can form local habits—perhaps sometimes as a prelude to expansion, or to departure, etc. Mr. Stockley had an *iris* larva hibernate successfully on a spun-up leaf in 1956-57, this being the first he had ever had do so. So perhaps another possibility may be kept in view, viz., that a reversion is occurring to an earlier habit.

The male larva under detailed consideration had his last autumn feed on 1st November 1957, and settled down for hibernation on the following day. On 24th November the first leaves began to fall from his bush after a heavy frost on the previous night. On the 1st December, during a period of keen frosts by night and warm sun by day, I cleared all remaining leaves off the bush other than the hibernaculum. During hibernation the larva stirred perceptibly only once,

until he resumed activity on or about 31st March. The change over to "Summer Time" occurred on Sunday, 20th April, and the times thenceforth are B.S.T.

On 21st April, at 11.0 a.m., the larva slowly raised his posterior half, and as slowly lowered it again, the entire process taking a good five minutes. On 23rd April, with the rare luxury (in that spring) of a bright and sunny morning and adjudging that the larva was in need of ultra-violet rays, I took the celluloid cylinder off the plant at 9.0 a.m. (not replacing it until 7.0 p.m.) and put the plant where it could get some dappled sunlight. When the sun became obscured at approximately 12 o'clock, I turned on the daylight lamp. The larva, which had been inclined to be sluggish, stirred at 11.55 a.m., and at 12.15 p.m. he was feeding freely. He ate one complete small leaf, and then started on a most extraordinary promenade on which he was still engaged at 2.05 p.m. when I had to leave him. At 3.0 p.m. he was found at rest on the upper side of a leaf, head downwards. At 4.39 he was moving his forepart about, so continuing until I switched off the daylight lamp at 6.0 p.m. The larva did not feed, or move, again to-day.

On 26th I had the daylight lamp on again all morning: on this day the larva fed only from 8.45 p.m. On 3rd May, thinking that the bush looked a trifle jaded, I placed another potted bush in the cage in such a manner that it was touching the first, thus leaving the choice to the larva. After a day when he didn't move at all, he changed both his feeding grounds and his seat to the new bush without further delay, and I then removed the old bush. On 9th May the new plant also was looking rather wilted, and on 10th the larva was very restless. On 11th the plant appeared somewhat recovered, and the larva was now eating very heavily and growing very fast.

On 31st May the plant was obviously wilting again, and the larva was wasting a great deal of time and energy in searching for suitable leaves of which there were, fortunately, still some. I, therefore, on 1st June, transferred him to yet another bush, which was so much to his liking that he started feeding from a new leaf while still on a leaf of the old bush which I was holding. He then explored the entire bush before making a seat-leaf and then settling down to a substantial meal. On 7th June it was raining and dull most of the day, but the larva ate furiously between showers; during the following night he consumed three large leaves! On 8th June I watched him feeding from one leaf while clinging to the underside of another—a manoeuvre I have not seen before or since. But on 15th the bush was now becoming stripped of large leaves and the larva was obviously becoming anxious, exploring the undersides of leaves quite inadequately in size for any requirement: I therefore transferred him to yet another bush on that day. He immediately span a leaf to its stem, and pupated on 18th. On 27th June I was able to observe, with the help of a powerful penetrating light, the growth made of the "nucleus". On the same day the pupa shook itself when sprayed lightly. As already described (*Entomologist's Gazette*, 1960), the imago emerged on 9th July.

For the two specimens which provided the material for this paper, the details of measurement, at maximum, were as follows:—

	♀	♂
Larva, length including horns (at rest, but not stretched out) ...	55 mm.	56 mm.
Pupa, Length .....	34 mm.	33 mm.
Pupa, Depth .....	13 mm.	13 mm.
Pupa, Width .....	9 mm.	7½ mm.
Wing-radius of imago .....	41 mm.	40 mm.

I find the differences between male and female in the mature larva and the pupa to be as follows:—

- (a) The female larva is stouter than the male. (The fully-grown male larva is often longer than the female, but this is not a reliable characteristic.)
- (b) The horns of the male larva are not only, *per se*, longer than those of the female, but appear even more so owing, as is pointed out by Mr. Hyde (*Entomologist's Record*, Vol. 66, page 100), to the greater bulk of the female larva.
- (c) The horns of the female larva are less divergent, length for length, than those of the male.
- (d) The female pupa is always wider than the male, as is exemplified in the dimensions stated above. It will be observed that, in these instances, the ratio of width to length in the female pupa is 26·47% and in the male 22·73%. There may be individual differences between specimens, of course, but in 11 pupae I have measured (resulting in 7 males and 4 females), in every female the ratio has been above 25% and in every male below 25%. I should mention that I find that this difference between the sexes is quite obvious to the eye, and that no instrumental means of measurement are necessary; in any cases the callipers are a dangerous appliance!

As in all other cases in my experience the main and most regular feeding time of both the *iris* larvae which form the subject of this paper was just after sunset, and neither fed during rain. As always, each was sprayed regularly; as were the pupae.

Sunset can be understood as constituting a universal factor in promoting action, even when it cannot physically be seen. Similarly the moment of high noon has an effect on the imago. Spraying, of course, is an artificial stimulus affecting several larvae simultaneously. But what the nature can be of other factors "triggering" activities and movements, we can at present only conjecture. The male larva, whose history is above related, had as his neighbour—in the next cage on the bench—a female larva of *Apatura ilia*. On 27th April, at 3.25 p.m., when the cages were inspected after an interval, both were on their respective seats. At 3.30 both started to move; both proceeded to points remote from their seats; at 3.32 both started to feed. At 3.55 p.m. both were still feeding, when I had to leave them for a few minutes. At 4.0 p.m., when I returned, both were back on their seats. I had to leave for Salisbury immediately afterwards. At 2.0 p.m., on 10th May, the commencement of feeding of these two caterpillars, in their separate cages, synchronised exactly.

In April and May 1956 I had two *iris* larvae in separate cages on the same bench. On 11th April, after there had been no visible movement of either larva for some days, at 3.20 p.m., both moved simultane-

ously. On 13th both changed their seat-leaves. On 16th, at about 3.0 p.m., both larvae started to move simultaneously. On 21st April they started feeding at the identical instant, about 12 o'clock (day). (One of these larvae, incidentally, underwent its third moult on 12th May, but did not eat its cast skin until the following day.)

I had the good fortune to see one of these 1956 specimens pupate. At 11.40 p.m., on 15th June, the larva suddenly writhed violently. On the following day, 16th, it writhed again at 8.23 a.m. More frequent movement started at 9.30 a.m., but ceased about 10 minutes later. I then sprayed the larva liberally. Pupation started at about 10.30. The skin was dropped at 11.45 a.m. exactly, and movement ceased 2 or 3 minutes later. Another specimen which had pupated on the previous day gave one last shake about 20 minutes after completion of pupation. The pupa formed on 16th measured on the following day 32 mm.; on 23rd, 33 mm.; and on 30th, 34 mm.

I conclude this paper with a brief notice of a larva which I collected, quite accidentally, in Wiltshire on 20th June 1956. I had been wanting some Broad-leaved Sallow for potting, and having dug up about six quite small plants I carried them to my car. Before placing them in the car I thought that perhaps I had better look over them, and there, lo and behold, on one of them was a quite small *iris* larva. This larva made rapid progress (last moult 29 June, pupated 21 July). I had to take the pupa with me on holiday, and eventually—though emergence was obviously imminent—had to bring it back again. After spraying the pupa, the puparium containing it was placed in the back of my van. There, wholly covered by luggage, the perfect male imago emerged (9 August) during the course of the long and bumpy ride back to Burnham

“Belfield”, Burnham-on-Sea, Somerset. February 29, 1960.

## The History and Present-day Status of *Gnorimus variabilis* L. (Col., Scarabaeidae) in Britain

By A. A. ALLEN, B.Sc.

This fine beetle, instantly recognised among our few native chafers by its deep black hue relieved by some creamy-yellow spots (the latter actually an epidermal secretion, characteristic of the Cetoniinae, certain Rhynchophora, etc.—it can be chipped off with the point of a pin) has a most restricted range in our islands. At the present time it is known to survive in a single British locality only: the Windsor Forest area. Here it is widespread but difficult to obtain as a rule, being most often found in the larval state in black wood-mould in the interiors and high up in the forks of old oaks, and more seldom directly under the bark where there is thick frass and mould. In this stage the insect, though rarely enough met with even in the course of quite intensive collecting, is usually more or less gregarious where it does occur; many have been bred by the late H. Donisthorpe and E. M. Eustace. The adults must be sought in the larval habitat from May to July, and in the latter month are occasionally to be found at large, settled on the bark, etc., or flying. Unlike the better-known *G. nobilis* L., *G. variabilis* seems little attracted to flowers, but it must be admitted that suitable kinds are often almost non-existent in its

haunts. My first encounter with this beetle was the finding of four specimens—after several years' search—in a fairly small oak stump, no doubt recently cut, in mid-June, 1940 (hardly a typical situation); followed a year later by a female example found basking in the sun on an old oak trunk broken off about five feet up; and finally a pair dug out of a cavity in the partly-decayed trunk of a fair-sized oak (of which, as ill-luck would have it, the female was severed in two by my digger). All three captures were in Windsor Great Park. I once saw it on the wing in the Forest, high up around a beech that had been struck by lightning; and on another occasion Messrs. L. S. Whicher and H. W. Forster saw (and chased in vain) a specimen flying in the Virginia Water end of the Great Park as late as mid-August or thereabouts. It should be added, however, that in both cases the identity of the beetle seen remains presumptive, though it could not well have been anything else.

Some account of the British history of this rarity, as far as known to me, may be of interest. Windsor Forest seems to have been noted as a locality from early in the last century, but South London appears to have yielded the first known specimens, to judge from a note entered in my copy of J. F. Stephens' "Manual" (1839) by its original owner (name not indicated) which reads as follows: "150 Specimens of this Insect were taken in 1849 at Brixton—Informt J. F. Stephens 5/9/49. They must be looked for in the mould and rotten wood that falls to the bottom of decayed Oaks digging down deep. A pair was first taken at Penge in 1806—and again a few at Windsor in about 1811 or 12". Stephens ("Illustrations", 1830) states that it was "found annually in some plenty near Windsor by Mr. Griesbach" and in the Manual gives only "Windsor Forest"; it is curious that he does not mention the Penge examples, seemingly the first to be taken in Britain. Canon Fowler (1890, *Col. Brit. Isl.*, 4: 59) cites the above three localities and also "Tooting and Purley, Surrey". He mentions further that it had not occurred in Windsor Forest for a long time past, but practically no one was collecting there between Stephens' day and his. In fact, it was found again there at about the time that Fowler wrote—in 1889, by J. C. Bowring; he sent adults and larvae to Fowler, who published a description of the latter in 1892, *Ent. mon. Mag.*, 28: 242 (in Fowler and Donisthorpe, 1913, *Col. Brit. Isl.*, 6: 273, the date of this is given wrongly as 1902). The next record is a note by the Rev. Theodore Wood (1899, *Ent. mon. Mag.*, 35: 94) reporting that a damaged example had been found on a path at Balham the year before; in the course of which he remarked that it could doubtless still be taken, if searched for, in the old trees on Tooting Common where it was not scarce fifty years previously. Probably about this time the eminent hemipterist John Scott took it at Lee, a mile or so from here—the record appears in "Woolwich Surveys" (1909) without further details. In 1908 it was rediscovered at Purley by the late E. C. Bedwell, who found a quantity of larvae under a piece of bark on one of the Purley Oaks (near the railway station of that name). For a year or two afterwards this tree continued to furnish larvae and beetles, but then, I believe, it was felled along with the few remaining oaks; of which latter, Bedwell, in recording his find (*ibid.*, 44: 273) notes that only one showed signs of having been formerly tenanted by the species.



Finally, Donisthorpe recaptured it in Windsor Forest in 1925, not long after beginning his intensive exploration of the Coleoptera of the area, and relates an amusing anecdote in connection with the discovery (1939, *Prel. List Col. Winds. For.*: 76). Now that most of the remnant of the Forest has been destroyed to make room for conifer plantations, it is to be hoped that this interesting chafer will continue to inhabit the Great Park, as probably its last British stronghold, for many years to come. Provided that felling is kept within reasonable bounds, the habits of the species should tend to protect it.

The distribution thus indicated is that of a primary forest relict centred on London and the districts to its immediate south and west, and there at the extreme north-west limit of its world range. It seems absent from the north and north-east side, though I have heard rumours of it from Epping Forest (a likely locality) and even from Charnwood Forest, Leics. (a most unlikely one)—both, I think, baseless and probably the result of confusion with *G. nobilis*. Some readers of the *Record* may know of other occurrences of *variabilis* than those I have listed; if so, I should be much interested to hear of them. It is by no means inconceivable that the species may yet linger on in certain spots within the metropolitan or suburban areas, such as Tooting Common, or even in places where it has never been detected; many old oaks in the right state must remain scattered about in parks, gardens, private or public grounds, etc., in the midst of populous built-up areas, which it would be scarcely possible to investigate without, at the very least, making oneself the object of highly unwelcome attention! That the beetle could exist unnoticed in such places for years is evident from its past history in this country and from the fact that, although so conspicuous, it is very seldom seen at large. There is one locality for which the apparent lack of a record is surprising: namely Richmond Park, with its multitude of ancient oaks which used to produce several scarce forest relicts (and might doubtless still do, were anyone bold enough to collect there nowadays).

According to Fowler (E.M.M., *l.c.*) the larva is dirty yellowish-white, but those I have found were generally of a slaty-grey tint. No doubt, however, the skin is more or less translucent, so that the colour may vary with the physiological state of the larva—depending most likely on the development of the fat-body at the time of observation. It appears to be rather tender and susceptible to fungal infection, and bred imagines are often deformed. Besides oak, a larva or two has sometimes occurred in beech at Windsor, when the condition of the wood-mould was suitable. Donisthorpe and I once turned up a number of what we assumed to be larvae of this species in frass and mould under the bark of some elm logs; but unfortunately I allowed myself to be persuaded to leave them and come back later when the adults should have eclosed—in which I was anticipated by mice and/or birds, for not a trace of the insect could be found on returning to the spot after some weeks. (So do we learn from bitter experience!) I am inclined now to think that these may after all have been merely larvae of *Dorcus parallelepipedus* L.—very common in the district—which some unknown influence had caused to be of a darker colour than usual. But there is nothing against other species of tree being utilised by *G. variabilis*, as it is recorded on the Continent even from stumps

of the maritime pine (*P. pinaster*).

The Fabrician name of *octopunctatus* has been much used for this species by European authors, and may have to be adopted in place of that by which it is better known here.

In conclusion, we may notice that when Fowler wrote his *magnum opus* it seemed to him that our two species of *Gnorimus* (incidentally the only ones occurring in Central Europe) were on the way to becoming extinct here (cf. *Col. Brit. Isl., l.c.*). It is, at least, gratifying to note that this trend was not maintained. Not only is *variabilis*, as I have suggested, in no immediate danger of extermination, but the other species, *nobilis*, is now known to be widely scattered over a large part of England and to be actually common in certain fruit-growing districts, e.g., mid-Kent, though because of its habits nearly as hard to find as its rarer congener.

## Winter Chironomidae (Dipt.) in the Lake District

By Dr. NEVILLE L. BIRKETT, F.R.E.S.

The interesting note by P. Roper in the *Record*, 72: 71-72, prompted me to go through my card index and list those species that I have come across during the winter months in this district. For the present note I have taken the winter months to be October to March, inclusive. My records cover approximately ten years, and during this time I have taken some 44 species during the winter months as defined. Some of the records no doubt concern late emergences of a species not usually emerging in the October period and also there are some which are unusually early emergences of April-May insects. There is still a considerable number remaining which can be looked upon as true winter species and which may be found in any of the winter months. These are usually to be found on the milder days with little wind—or if there is a wind they are to be found in sheltered situations such as those suggested by Mr. Roper. It is my experience that frosty conditions are definitely inimical to flight activity of Chironomidae and few or no species are found when such prevail. One specimen—*Smittia aterrimus*—was attracted by a newly felled sycamore tree on 16th November 1958. This came to rest on the newly cut surface of the tree along with a number of other diptera and one small beetle.

Nomenclature and order in the following list are those of Kloet and Hincks, 1945, *Check List of British Insects*.

*Diamesa culicoides* Heeger. 6.xii.56; 7.iii.57. This is a common early species to the m.v. light trap here when the females seem to be more plentiful than the males.

*Brillia modesta* (Meigen). A common species throughout winter. Indeed I have records for it for every month of the year. It does seem to be more in evidence in the winter months when, perhaps, it is more noticeable in the absence of many other species.

*M. (Metriocnemus) hygropteticus* Kieffer. 13.x.51; 15.iii.52.

*M. (Metriocnemus) fuscipes* (Meigen). 28.iii.57.

*M. (Paraphaenocladus) impensus* (Walker). 30.iii.57.

*M. (Parametriocnemus) stylatus* Kieffer. 11.x.53.

*Cricotopus sylvestris* (Fab.). 11.x.53.

*Cricotopus pulchripes* Verrall. 25.x.51.

*Cricotopus trifascia* Edwards. 13.x.51; 11.x.53; 2.x.56.

- Cricotopus vitripennis* (Meigen). 12.iii.53.  
*H. (Trichocladius) rufiventris* (Meigen). Common most Octobers and 1 have one record for 6.xii.56.  
*H. (Trichocladius) skirwithensis* Edwards. 9.x.53.  
*H. (Trichocladius) effusus* (Walker). 21.x.53.  
*H. (Chaetocladius) melaleucus* (Meigen). 12.x.51.  
*H. (Chaetocladius) perennis* (Meigen). 17.i.57; 30.iii.57; 4.xi.56.  
*H. (Chaetocladius) piger* (Goetgh.). 20.iii.52; 8.iii.52; 15.iii.52.  
*H. (Chaetocladius) dissipatus* (Edwards). 13.x.51.  
*H. (Bryophaenocladius) vernalis* (Goetgh.). 1.x.57.  
*H. (Bryophaenocladius) subvernalis* (Edwards). 12.x.51.  
*H. (Bryophaenocladius) thienemanni* (Kieffer). 28.ii.57.  
*H. (Bryophaenocladius) dentiforceps* (Edwards). 22.ii.53.  
*H. (Bryophaenocladius) apicalis* (Kieffer). 5.iii.53.  
*H. (Bryophaenocladius) semivirens* (Kieffer). I have taken this species in all months from i-x.  
*H. (Bryophaenocladius) minor* (Edwards). 5 and 6.xii.56.  
*H. (Bryophaenocladius) devonicus* (Edwards). 25.x.51.  
*H. (Bryophaenocladius) hospitus* (Edwards). 5.xii.56; 17.i.54; 28.ii.57.  
*H. (Bryophaenocladius) brevicar* (Kieffer). 30.iii.56.  
*H. (Bryophaenocladius) calvescens* (Edwards). 5.xii.56; 17.i.54; 5.iii.53; 1.x.57.  
*H. (Bryophaenocladius) coerulescens* (Kieffer). 13.x.51.  
*H. (Limnophyes) minimus* (Meigen). Common in ii and iii as well as in other months outside those of winter.  
*H. (Limnophyes) prolongatus* (Kieffer). 13.x.51; 26.i.57; 7.iii.57; 31.iii.56.  
*H. (Smittia) aterrimus* (Meigen). All months.  
*H. (Smittia) leucopogon* (Meigen). 1.x.57.  
*H. (Smittia) pratorum* (Goetgh.). 22.ii.53.  
*H. (Smittia) rectus* (Edwards). 15.iii.52.  
*Thienemanniella clavicornis* (Kieffer). 18.xi.51.  
*Thienemanniella flavescens* Edwards. 11.x.53.  
*C. (Corynoneura) scutellata* Winnertz. 5.iii.53.  
*C. (Chironomus) anthracinus* Zett. 5.iii.60.  
*T. (Micropsectra) fuscus* (Meigen). 30.iii.57.  
*T. (Micropsectra) subviridis* Goetgh. 3.ii.57; 30.iii.57.  
*T. (Micropsectra) brunnipes* Zett. 8.iii.52; 23.iii.51.  
*T. (Micropsectra) atrofasciatus* Kieffer. 11.x.55.

It will thus be seen that a considerable percentage (about 12) of the total British Chironomid fauna is active during the winter months and there is surely much to be learnt of the biology of these species which can well be undertaken during this time when field work is at least a little restricted. My list is not claimed to be a complete representation of species found in this district during the winter months but it will, I think, represent the majority of active species.

3 Thorny Hills, Kendal. 21.iii.60.

## Notes and Observations

EARLY RECORDS FOR 1960 IN NORTH-WEST LANCASHIRE.—The comparatively mild winter in this area has produced a few interesting early appearances of lepidopterous species. A visit to Warton Crag, a partly

wooded limestone hill near Carnforth, during the mild cloudy evening of 31st January led to the observation of three of these. They were *Conistra vaccinii* L., not unexpected, being a light hibernator, of which two examples were noted; *Erannis marginaria* Fab., a very small male specimen; and *Phigalia pedaria* Fab., two males, one being ab. *monacharia* Staud.

A further two unexpected species were found in the Robinson m.v. trap in my garden near the centre of Morecambe on the night of 28th-29th February, during a very mild period when the temperature remained continuously in the high fifties or low sixties for two or three days. These were *Agrotis ipsilon* Hufn. and *Nomophila noctuella* Schiff., one example of each, both in apparently freshly-emerged condition. It is difficult to believe that they could have been migrants and have retained this fresh appearance so far north.—C. J. GOODALL, 2 Derwent Avenue, Morecambe, Lancs.

THE FOODPLANTS OF MARGARONIA UNIONALIS HÜBN.—The larva of this moth, as far as I can discover, is generally considered to feed only upon jasmine in Britain—though normally incapable of withstanding our climate for more than a generation or two at most, if that. In its native Mediterranean region olive is usually recorded as the primary foodplant. It may, therefore, be of some interest to report that the progeny of the female moth that came to light here in October (see *Ent. Rec.*, 71: 266)—or rather those larvae which survived the first instar—fed up very readily on privet, after having been given a start with winter jasmine which they seemed to find rather tough and leathery. The discovery that the larvae of *unionalis* would eat privet is, however, due to Mr. S. Wakely, who had a batch of eggs sent him about the same time as mine and was surprised to find the newly hatched larvae eagerly feeding on a leaf or two of this shrub which had been casually put into their box to supply moisture. He at once informed me, knowing that I had a brood just hatched. Mr. Wakely's larvae continued to eat privet freely but showed a distinct preference for the leaves of white jasmine when the two were offered. As for my larvae, I tried them also when fairly large with ash, lilac, and forsythia. All three were eaten; but perhaps scarcely as readily as the privet, which may have been due to their being on the point of falling—while the evergreen privet remained fresh. It therefore appears likely that any of the family Oleaceae would serve as foodplants for this species, while no doubt jasmine is the first choice and privet the second (apart from olive which is not normally 'on tap' in this country). My moths emerged between 19th and 30th November, the larvae and pupae having been kept most of the time in gentle heat.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 22.iii.60.

BRITISH ENTOMOLOGISTS AND THE BRITISH FAUNA.—As Mr. Carolsfeld-Krausé thinks that the subject of our little controversy would be better touched on privately, I will leave it at that, and endeavour, when the weather is warmer and I can write with greater ease, to drop him a line.

The chief reason for my reply appears to have arisen from a misunderstanding; when he referred to smog and our fathers, I naturally thought he was referring to the generation I knew as a young man, which I regard as the great age of British entomology. Few countries

have produced in one generation amateurs like T. A. Chapman, F.R.S.; E. Meyrick, F.R.S.; L. B. Prout and Thomas de Grey; Baron Walsingham, F.R.S.; all of whom I had the honour of knowing.

I gather from his second letter that it was to my own generation that he referred. Touché. I complained for years that they were mostly a lot of butterfly-mongers, and, as Cockayne once said, would have been better employed collecting match-box tops! However, times have changed.

I am afraid the poor seal has got the laugh over both Mr. Carolsfeld-Krausé and myself. At a meeting of the South Essex Natural History Society a few weeks ago, my friend Mr. Gordon Blythe showed a number of colour slides of a half-grown *Phoca vitulina* Linn. in his garden. In one of these it was on the edge of a rose bed, which is near enough to a strawberry for our purposes. It had been found stranded on Shoebury Beach, and after having been declined by the Zoo, was released at Foulness a day or so later.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliffe-on-Sea. 28.iii.1960.

**HETEROGRAPHIS OBLITELLA ZELL. IN S.E. LONDON.**—Amongst my captures at m.v. light here last year Mr. Wakely detected an example of this rare immigrant; it is a rather small and light male in fresh condition, which came in on the night of 8/9th August (with me a distinctly good one for rarities as it produced also *Coleophora clypeiferella* Hofm. and a *Cercyon*\* (Col.) new to Britain). I ignorantly supposed the *oblitella* to be probably some species of *Ephestia* or *Homoeosoma*. There is neither a figure nor a description in Beirne (*British Pyralid and Plume Moths*)—it being apparently considered too scarce to merit such full treatment—but it is stated (p. 88) that the moth may possibly be overlooked as a species of *Ephestia*, and that it was taken in the Isle of Wight about 1814-16. This seemed to me an incredibly early date for people to be collecting obscure micros in Britain, so I turned to Barrett (*Brit. Lep.*, 10: 35) for confirmation, as a result of which it is now clear that the dates given by Beirne should read (and were doubtless intended for) 1874-76.

The recent history of the species here, which begins in 1953, is very fully dealt with by Mr. H. C. Huggins (1959, *Ent. Rec.*, 71: 284-5). It is notable that my specimen occurred on the same night as one taken in S.W. Surrey—also a small light male—whilst another turned up in W. Kent two nights later; and there were other captures that year (cf. Huggins, *l.c.*). The only distinction I can perhaps claim for my moth is that it is, in all likelihood, the first record of the species for the London suburbs.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 12.iv.60.

\*Mr. J. Balfour-Browne (Dept. of Entomology, British Museum (Nat. Hist.)) has asked me to appeal to users of light-traps to save any good-sized *Cercyons* found therein and forward them to him at the end of the season, with a view to elucidating the British status of this insect (*C. lamnatus* Sharp). The species was described from Japan, but has been taken recently in Germany, always at light; it is fairly large—about 4 mm. long, pitchy-brown with paler sides, not very convex, and thickly punctate.

COLEOPHORA STERNIPENNELLA ZETT. IN N.W. KENT AND N.E. SURREY.  
—Mr. S. Wakely mentioned to me last year that a *Coleophora* previously unrecorded in Britain, *C. sternipennella* Zett., was not uncommon in his district, the larva living on white goosefoot (*Chenopodium album*). On my remarking that a species of the genus which I had taken to be *C. laripennella* Zett. abounded on the same plant in my garden, he very kindly lent me the typescript draft of a paper by Mr. E. C. Pelham-Clinton on the *laripennella* group of species in Britain, dealing among others with the two latest additions to our fauna—*versurella* Zell. and *sternipennella* Zett. From this I was able to satisfy myself that the Blackheath species was in fact the last-named (as I suspected it would turn out to be), and the determination has since been confirmed by actual comparison with Mr. Wakely's specimens, named by Mr. Pelham-Clinton. His paper will be found in the *Entomologist*, probably the 1959 volume, but I regret I cannot give the exact reference. Apart from the genitalia, the members of the group—of which five are now recognised as British—differ chiefly in the antennal characters, scale coloration, relative lengths of the last two palpal segments, and comparative size.

Besides Blackheath I can also record *sternipennella* from Carshalton, Surrey, where Mr. Dudley Collins has taken a specimen which I have carefully compared with my own. Mr. Wakely's material is from Camberwell and South Norwood. It looks, therefore, as if the species will prove common around London, and perhaps fairly generally; but, as yet, I think, no other records of it have been published.

In 1958 the moths appeared in profusion flying about the foodplant in the evening sunshine in early July, and a few came to m.v. light last year. The short grey larval cases are common on the seed-heads of the goosefoot in autumn, and a good many are to be seen in spring and early summer ascending a fence at the base of which the plants grow. Although the larvae must feed up wholly in their first year—for their food does not reappear until the following autumn—they are, in my experience, very restless in confinement, roaming around their receptacle for weeks instead of settling down for pupation, and producing few moths in the end. This may be due to want of moisture, but if so it is curious that the larvae of *C. albicornuella* Bradley (= *paripennella* auct. Brit. nec Zell.) react to that circumstance in the opposite way, for instead of becoming more active, when the leaves on which they are feeding dry up, they usually attach themselves to a stem and become quiescent until fresh leaves are introduced.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 12.iv.60.

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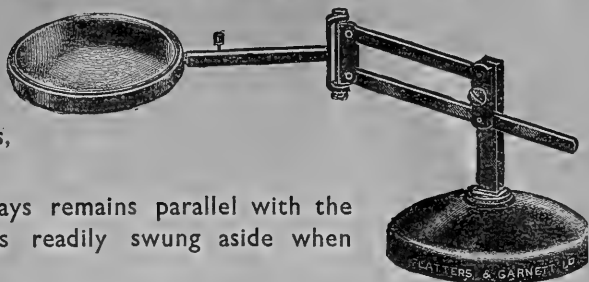
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# THE ENTOMOLOGIST'S RECORD

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*Edited by* S. N. A. JACOBS, F.R.E.S.

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## Conservation versus Destruction of Forests — an Entomologist's Protest

By A. A. ALLEN, B.Sc.

I read Mr. C. M. R. Pitman's long and eloquent article on the New Forest as a former happy hunting-ground for the lepidopterist—but which the march of 'progress' is rapidly converting into a dreary substitute, of sterile, man-made monotony—with sentiments of the keenest sympathy mingled with disgust at the depressing situation and still more intolerable prospect revealed. When things have come to such a pass that not even land actually held by the National Trust is spared, one really feels that the last straw of endurance has been reached. I wonder, incidentally, by what right the Trust's property may legally be raped and violated in this fashion, and—if that can happen anywhere at any time—what is the good of having a National Trust at all. It is surely a trifle ironical that the same issue of the *Record* carries a notice proclaiming a postgraduate diploma course in conservation. This is excellent, no doubt, and deserves a good response; but I hope that by the time a sufficient number are trained there will be one or two worthwhile areas left to conserve. Of course the various Nature Reserves and National Parks set up from time to time are all to the good and I suppose we must be thankful for such oases in our grossly over-populated island. I am more concerned, however, about those areas—forest and ancient wood- and park-land above all—that hold the highest concentrations of rare species, and here I speak more particularly for coleopterists. To such areas, the most serious threat to-day is not the cupidity of collectors and the thoughtless depredations of trippers, bad as those are; it is (let us face it) the destructive activities of the Forestry Commission, who everywhere adopt the short-sighted policy of replacing native mixed woods by conifer plantations, and of those local authorities who equate natural luxuriance and diversity with untidiness.

It would be churlish not to acknowledge the good works of salvation being performed by the Nature Conservancy, often in the teeth of resistance by opposing interests. Yet it cannot be denied that, hitherto, that body has been concerned far more with the establishment of Reserves where ecological problems can be studied—in itself, of course, an admirable thing—than with the protection of local faunas containing a number of scarce relicts which, having lost the power to colonize new ground, are in danger of extinction from the inroads of 'civilisation'. Thus, while the Conservancy chooses to acquire, for instance (and doubtless at considerable expense), a remote and not specially favoured tract like the Isle of Rhum—in any case unlikely to suffer much damage in the foreseeable future—no move is made to save our fast shrinking remnants of primary forest with their rich relict faunas, which in another fifty years will be practically non-existent as entomological sanctuaries unless something drastic is done in time. The process of attrition, one can readily envisage, will be helped on by the ever more frequent aerial spraying of ever more toxic chemicals over ever larger expanses (a friend in the plane-equipping business tells me that the thing is assuming greater proportions year by year). I should think that any naturalist visiting us from some such country as Sweden, where

they appreciate their heritage of Nature and know how to make their forests pay whilst allowing them to regenerate naturally, must stand agape with disillusion on learning the stark truth of how these affairs are mismanaged here.

Might not anyone be justified in expecting that, by now, our few still surviving historic areas of ancient forest would have been secured by the State *in perpetuo* for the benefit of the nation and the researches and recreation of nature-lovers? I fear that we, as a people, have always been too apathetic about these things—too slow to stand up for what should be our right, too ready to tolerate seizure of our land by bureaucrats. As it is, only a single one of these remnants—Epping Forest—seems to have been secured. But one alone, and that the least productive entomologically, is not enough; every collector knows that the fauna of each is individually and uniquely interesting, presenting its own problems, possessing species now peculiar to it—despite the large element they have in common. The annihilation of any one would, almost certainly, result in the loss to our fauna of a number of harmless and quite irreplaceable insect species. I can imagine our hypothetical foreign visitor returning badly shaken to his native land, full of wonder at those queer English who not only seem unable to practice sane forestry but, with the loveliest countryside of all, appear more insensitive than any other West Europeans to the recreative joys and long-term aesthetic and even scientific values that flow from contact with unspoilt and richly varied Nature.

A most pressing need is for more men, in positions of influence and high office, of the stature and breadth of outlook of, for example, Dr. Fraser Darling, whose scientific training in ecology is illuminated by a profound humane understanding and a commanding grasp of the deeper issues involved; and further, who is clear-sighted enough to perceive (a fact whose importance cannot be exaggerated) that the two aspects of the question, i.e. the technological or economic and the purely humane or cultural, are not really opposed at all but, in the last analysis, call for the very same enlightened policies. Dr. Darling has forcibly argued that the conserving and developing of our resources of organic Nature is best served in the long run by methods more intelligent than wholesale devastation of the countryside and its wild life, which myopic policy will ultimately have the reverse effect to that intended. It is high time that his warning were heeded by officialdom—by the all too often ill-educated bureaucrats to whom we have seen fit to entrust our destinies. By this, of course, I mean no disrespect to the exceptional individuals in their ranks who are alive to the wrongs being perpetrated in our name, but whose word, it seems, counts for little. More power to their elbows! (Can planning and executive authority *never* go hand in hand with far-seeing wisdom? It is not as though the latter quality were lacking in the community.)

The ancient Greeks were no more or less than realists when they stressed that *hubris*—that human arrogance which is cosmic impiety, and which we may translate in our modern context as the greedy, ruthless exploitation of Nature and her resources without care for the future—always, sooner or later, brings in its train *nemesis*, the inexorable punishment meted out by the gods for sinning against the natural law—or, in the scientific context, simply the deterministic law that a cause is followed by its effect, which we ignore at our peril!

\*The National Trust is not a State institution: it was founded in 1895 by Miss Octavia Hill, Sir R. Hunter and Canon Rawnsley for the purpose of preserving as much as possible of the open countryside for the people. It is independent of the State and relies for its funds on bequests, donations, and subscriptions. The State makes no contribution to its funds. It has no connection with the Nature Conservancy, an organisation founded by Royal Charter in 1949.—ED.

## Migrant Lepidoptera in the Oxford District, Autumn 1958 -- Spring 1960: Some Observations and Comparisons

By P. A. DESMOND LANKTREE, F.R.E.S.

The Oxford District is generally accepted as being that area included within a 10-mile radius of Carfax in the city.

1958.

*V. atalanta* L.—Appeared in large numbers from 25th August onwards, and was seen visiting the many buddleias (upwards of half a dozen per bush at times), and ice-plants in all parts of the town. Also out at Marston, Sandford, Wheatley, Bagley, N. Hinksey and Wytham, the last specimen being recorded on 3rd October.

*P. brassicae* L.—Very numerous in the autumn, and vieing with *atalanta* for places on the buddleias.

*P. gamma* L.—Common from 10th August onwards, visiting electric light on most nights throughout the rest of the month and during September.

No *V. cardui* L., *C. croceus* Fourcroy, nor *M. stellatarum* L. were seen, but no lucerne fields were visited.

1959.

*V. atalanta*.—Because of the large numbers noted locally the previous autumn, local woodland was visited in the early spring for signs of this species. The only specimen seen was watched from about 4-4.10 p.m., basking and planing in a sunny ride in still air by some stacked timber. Although nothing like the "100 spring records, of which perhaps 20 may have hibernated" in T. Dannreuther's General Summary for 1935 (*Entomologist*, 69: 3), as four other early spring records for 1959 occur scattered throughout Vol. 71 of this periodical alone, and these are always of interest, they are brought together here in date order and the Oxford record appropriately inserted:—

1: February 27—Upwey, Dorset (H. C. Warry, p. 111).

1: February 28—Bournemouth, Hants (S. C. S. Brown, p. 138).

1: April 14—Lincoln (G. E. Hyde, p. 161).

1: April 24—Bagley, Berks. (D. Lanktree).

1: May 22—Cranleigh, Surrey (A. E. Collier, p. 202).

No more recording was attempted until 2nd July, when about 8 specimens were seen in Bagley Wood at the same place as the above record, and from then on it was noted to be generally present in small numbers throughout the area until observations ceased on 25th July.

In the Dundee area from 29th July to 14th August, if the species was present at all it may have been so in its early stages, but certainly no adults were seen in flight. There are later records for Scotland from another source elsewhere in Vol. 72 however.

From 15th August, observations were resumed at Oxford but the autumn generation did not appear on the wing until the 29th, from which date it was regularly represented by fair numbers, but nothing approaching those of the same season in the previous year. It is notable that by far the greatest number were recorded from wooded areas and comparatively very few were seen in town gardens, even at the buddleias, which at best, supported the odd specimen at intervals. Whether this may have had anything to do with the relatively advanced state some of the buddleia blossom may have been in, due to the long summer, is not known, but certainly there was still plenty of the blossom to be seen and it is an interesting question.

The last record was obtained on 6th October, when 6 specimens were seen flying at Wytham, but observations ceased on this date in wooded areas anyway.

*P. brassicae*.—Spring brood abundant, but summer generation probably below average numbers, and very much below those of the previous autumn.

*V. cardui*, *C. croceus*, *M. stellatarum* and *P. gamma* L.—As far as reports in the *Ent. Record* go, despite the long warm summer, immigration of *cardui* does not seem to have been impressively large anywhere in Britain. A sprinkling only of *croceus* too is all that seems to have materialised in the three southern seaboard counties of Hants, Dorset and Cornwall, while the best numbers in any one place seem to be constituted by the report of a little over a dozen seen in Herts. (C. Craufurd), and the surprise of about a dozen reported from the S.W. Scottish coastal county of Wigtownshire (L. W. Burgess). A few *stellatarum* were recorded from each of Herts., Bucks., Surrey and Hants, and one from S. Shropshire.

In the Oxford District, these three species were not noted by the writer anywhere else outside a lucerne field to which he paid repeated visits. Their occurrence here, together with that of *P. gamma* (which was well represented in other counties, according to reports in the *Record*), is tabulated below:—

VISIT.	DATE.	HRS.	CARDUI.	CROCEUS.	STELLATARUM.	GAMMA.
1.	18/8	—	1 s	—	—	A few hundred
2	21/8	—	3 s (1 ♀ t)	—	—	Same
3	22/8	—	—	—	—	Same
4	29/8	3½	1 ♂ t	—	—	Not so many
5	5/9	1½	—	—	—	Largest nos. seen yet : many hundreds.
6	10/9	2	1 s	2 ♂, 1 ♀ t	—	Not so many, but still plentiful
7	12/9	3	4 s (1 ♂, 2 ♀ t)	2 ♂ t	5 s (2 t)	Same
8	15/9	1½	—	—	2 s (1 t)	Much reduced nos.
9	20/9	2	—	—	3 s (1 t)	Perhaps 2 or 3 doz.
10	3/10	2¼	—	—	1 s	—
11	6/10	4	—	—	2 s	—
TOTALS	18/8-6/10 :		10 s (5 t)	5 t	13 s (4 t)	Nil t

s = nos. seen.

t = nos. of s taken.

Hrs. in field less than 1, unless otherwise stated. Of the 5 *cardui* seen but not taken, 4 were recognisably distinct as individuals as characteristically worn : of the 5th, there is some small doubt. Similarly, every allowance was made for *stellatarum* sightings, thus on 6/10, the 2 recorded were thought to be the same 2 seen together many times in different parts of the field during the 4 hrs. spent in examining another (non-migratory) species.



*N. noctuella* Schiff.—Reported plentiful in other counties, was also present in considerable numbers during the latter part of August and early September in the lucerne field mentioned.

1960.

*H. peltigera* Schiff.—This is the only migrant seen so far this year. A male specimen, it was taken at ordinary electric light in Oxford on the 10th March, approximates closely in colour and marking to that represented by fig. 5, pl. 14, of Dr. Ford's book<sup>1</sup> from Dr. Kettlewell's temperature experiments, and appears to be only the second record for the District to date.

Although a very early date for the species, which does not appear to be much in evidence before May or June, it is not unique for the month: Mr. C. S. H. Blathwayt<sup>2</sup> records taking one at Weston-Super-Mare, Somerset, on 13th March, 1948.

The only previous record for the Oxford District seems to be that listed by Mr. R. F. Bretherton in 1939, and jointly recorded by Messrs. A. H. Muirden and P. B. Whitehouse at Bagley on 4th June, 1938.

"The species", says South<sup>3</sup>, "seems to be of fairly regular occurrence in Devonshire and Cornwall, but it has also been observed, more or less rarely, in many other English counties, chiefly those on the coast". From the periodicals, however, the mercury vapour lamps seem to have accounted for fair numbers in many varied places in recent years.

#### REFERENCES.

<sup>1</sup>Ford, E. B. 1955. *Moths*, pp. 56-57, and 109.

<sup>2</sup>Blathwayt, C. S. H. 1948. *Entom.*, **81**: 100-101.

<sup>3</sup>South, R. 1908. *The Moths of the British Isles*, II, p. 51.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

PINS. I feel it may not be out of place in these notes to give a few remarks on the pins that have been used for these insects, more particularly for the Tortrices and Tineids.

The best, although a bad best, of those in vogue until the present stainless steel ones appear to have been the very ancient hand-forged white pins with the large top, and the gilt. The hand-forged pins usually showed some sign of "verdigris" (really an oleate of copper) but in very few cases was this sufficient to destroy the insect. Sheldon purchased, amongst others, most of Desvignes's *Acalla cristana* Fabr., dating from about 1850, which were set on these pins, and although he deemed it safer to reset these historic specimens, he told me that he thought they would have been perfectly safe without his having done so.

Gilt pins were usually considered the next best, after it had been discovered what a snare black pins were from the grease-preservation position. I well remember the late L. W. Newman telling me that specimens set on these were the best if you wanted them to last. They were, however, rather disappointing at times; in 1903 A. B. Farn showed me with gloom a magnificent bred series of *Eucnemidophorus rhododactylus* Schiff. set on gilt pins about 1880, nearly all of which had

dropped to pieces, with green spirals encircling their thoraces.

The usual "white", tin over brass, were pretty unsatisfactory and the advent of the black pin, which was said to be perfectly safe, was hailed with joy. I do not think that the black pin was quite so bad as it is generally considered to be to-day, provided that due precautions were taken in using it. B. A. Bower used nothing else during the latter part of his collecting, but every pin he used was subjected to a careful scrutiny under a lens for several minutes and immediately rejected if he found the slightest flaw in the varnish. This, however, involved a lavish amount of time, and also rejections; in one batch he rejected three pins out of every five.

Most of us, however, used black pins in blind faith from the early years of the century, with most unhappy results. I did very little with micros during the first world war, and at the end of that time was horrified to see the number of my pre-war specimens that had come to grief. Others, like Sheldon, almost gave up collecting them. It was not until his travels after foreign butterflies were ended by the war that he took them up again.

One fairly satisfactory type of pin had long been on the market, the so-called solid silver pin. This was perfectly safe so far as grease was concerned, but if made sufficiently thin to suit a small *Tortrix*, it became so pliable as to be almost useless, whilst thicker ones as supplied often had defective points. My late friend, J. W. Corder, always used these for the *Pyalid* group.

The salvation of micro-collecting came, so far as I am aware, from one man, the late William Mansbridge. Mansbridge was a consultant analytical chemist, specialising in oils and fats, and also a very keen micro-lepidopterist. When chrome-nickel-steel first became well known, he conducted a number of experiments with oils and fats on the various alloys and at length obtained most satisfactory results. The only trouble then was to obtain the pins. Mansbridge, most kindly, would supply the wire, but for a time no firm took up the manufacture of pins. Mr. Morgan of Torquay used to make them individually on a small lathe, but once their value became known, he was overwhelmed with orders, and, for a time, several of us had to rely on the generosity of Mr. L. T. Ford, who also made them by hand and helped his friends out. After a time, however, they came permanently on the market, and I think that many collectors to-day, like myself, use them for everything from a butterfly to a *Hemimene*.

## Notes and Observations

*COSCINIA CRIBRUM* LINN.—Sidney Brown in the April *Record* (*antea*, 94) questions my statement that the Hampshire records of *Coscinia cribrum* L. near Ringwood "almost wholly relate to Dorset".

The St. Leonards localities are, in fact, in Hants, but they only represent a small area of the original habitat of *C. cribrum*. Its main headquarters were Ashley Heath and the large stretch of heathland from Uddens to Verwood. J. H. Fowler's specimens were almost wholly taken in that area; at no time when I knew Fowler did he bother to

go to St. Leonards as the Ashley Heath area was far more productive. George Gulliver may have gone to St. Leonards; that I cannot question, as I do not know.

I worked both areas for *cribrum* in my youthful days, and for every one I got at St. Leonards I got thirty on the Ashley Heath area, so I abandoned St. Leonards.

Modern developments have restricted and in many cases destroyed the habitats; in fact, when I look back seventy years to my early collecting days, and compare the countryside in this area as it was then, and the urbanised state of most of it, I wonder whether in another seventy years there will be any lepidoptera to catch excepting cabbage whites and clothes moths.—W. PARKINSON CURTIS, Ladywell Cottage, Branksome Park, Bournemouth.

MIMAS TILIAE LINN. IN YORKSHIRE.—This moth is an established resident of cultivated lime trees in Doncaster. Larvae, pupae, and imagines have been found in the district almost every year since 1954. The imagines are extremely handsome creatures, and more vividly coloured than specimens taken from the south (a male in my collection is entirely sooty grey, slate green, and white). I have been unable to find another record of the moth breeding in Yorkshire, and I would be most interested to hear of any other records of this moth outside its normal range, especially records of the moth breeding. It is possible that the species is on the increase at the moment.—D. A. WHITE, King's College, Cambridge.

HERSE CONVULVULI LINN. IN CORNWALL.—It may be of interest to record a small male *Herse convolvuli* Linn. in my mercury vapour light trap at Lerryn by Lostwithiel last night. So far this season has locally proved to be the most unproductive of moths that I remember.—COL. H. G. ROSSEL, The Old School House, Bodinnick, Lanteglos by Fowey. 10.v.1960.

DELAYED EMERGENCE OF CERURA VINULA LINN.—During the past week, two specimens of *Cerura vinula* Linn. have emerged from cocoons made as long ago as August 1958. I have bred this species several times, but never before have I known it to spend two winters in the pupal state, and this seems especially surprising in view of the hot and sunny summer of 1959. The cocoons were kept indoors during the winter of 1958/59 and the summer of 1959, and in a garage during the past winter.—P. H. LAWSON, The Mount, Chobham, Surrey. 15.v.1960.

FOODPLANTS OF BUTTERFLIES IN NATURE: A REQUEST FOR INFORMATION.—With reference to *The Butterflies and Moths of Kent* now being published, I would be glad to hear from anyone who has observed oviposition in the wild in Kent of any of the Satyridae and HesperIIDae, or who has discovered their larvae in nature in Kent; and who can in either case specify the plant(s) concerned. To save unnecessary correspondence, I do not wish for records of plants on which the species will feed in captivity, only records of observations made in the field.—J. M. CHALMERS-HUNT, 1 The Hardcourts, The Grove, West Wickham, Kent. 20.v.1960.

COLEOPHORA CLYPEIFERELLA HOFM. AT BLACKHEATH: A THIRD BRITISH RECORD.—In a box of micros which I brought for him to look over recently, Mr. Wakely recognised a specimen of this very distinct *Coleophora*. It came to m.v. light here on the night of 8/9th August last, and, although it contrived in a most exasperating manner to wedge itself into a crevice of the woodwork of the box on which the lamp stood, so that it had to be prised out with a pin (!), it was fortunately not damaged. The only previous records of its occurrence in Britain are of a specimen captured by Mr. Wakely at light at Camberwell on 11th August 1953, and recorded in 1954, *Ent. Rec.*, **66**: 272, and another taken at Dover by Mr. G. H. Youden some time subsequently. In addition, Mr. Wakely tells me that he saw recently in Mr. Youden's collection from Dover what he later realised was almost certainly another example of the same species.

Whether *C. clypeiferella* is an insect of migratory habits, or whether it is really established in this country but very scarce, appears doubtful. It is noteworthy in this connection that of the four British specimens now known, two are from South London and two from Dover, but taken at different times, and this perhaps rather suggests local breeding. There is plenty of *Chenopodium* in the garden here and in waste places round about, but the only species I have so far found definitely associated with it is *C. sternipennella* Zett. (see previous note).—A. A. ALLEN, 63 Blackheath Park, S.E.3. 12.iv.60.

## The larva of *Wormaldia occipitalis* (Pict.) (Trichoptera, Philopotamidae)

By ALLAN BRINDLE, F.R.E.S.

The Philopotamidae, in Britain, form a small distinctive family of caddis-flies, consisting of four species. The larva of one, *Chimarra marginata* (L.), is unknown; that of *Philopotamus montanus* (Don.) has been described by Hickin (1942), and that of *Wormaldia subnigra* McLach., by Philipson (1953). The larva of the fourth species, *Wormaldia occipitalis* (Pict.), has not been described in English, though it is included in Nielson (1942).

The larva of this latter species has been obtained from a small woodland stream at Witherslack, Westmorland, and is here described and figured, together with notes on the biology of the family as a whole, and a key to the known larvae.

The larvae of this family are of the net-spinning, campodeiform type, and are readily distinguished by three main features:—

- (1) Of the thoracic nota, only the pronotum is sclerotised, the meso- and meta-nota are membraneous and coloured like the abdomen.
- (2) No abdominal gills are present.
- (3) The labrum is soft and whitish, and retractable under the fronto-clypeus.

The larvae of the three species are found in running water and show a close resemblance. The head and pronotum are uniformly coloured reddish or yellow, the pronotum being bordered posteriorly with black. The head is narrow and elongated, the eyes being rather close to the lateral and anterior margins. The abdomen is soft, parallel-sided, whitish or yellowish, the colour depending to some extent on the content of the water. In water containing iron oxides the colour tends to become yellow—similarly the normally white thoracic gills of the nymphs of the stoneflies, *Perla cephalotes* Curt., and *P. carlukiana* Klap., also become tinted with yellow in the same water.

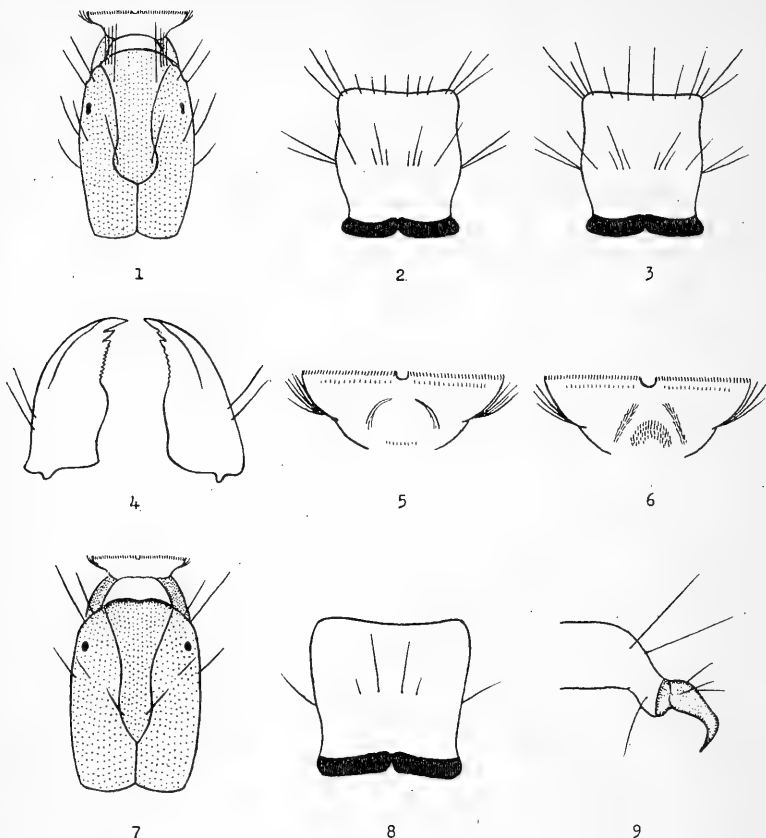
The larvae do not make a case but spin nets of silk. The nets are more or less tubular, one open end being attached to a stone in the water, the other end, which is closed, is left free to be suspended horizontally by the current. Organic debris, diatoms, etc., are brought by the current and deposited on to the surface of the inside of the net, the latter thus acting as a very efficient sieve. The larva inside, head upstream, removes this deposit with the aid of the curious, soft, brush-like labrum which sweeps the material from the net surface backwards towards the mouth. Philipson (1953) gives a short, excellent account of the feeding of *W. subnigra*. This method of feeding is correlated with the absence of brushes of hairs on the internal edges of the mandibles (fig. 4), such brushes being found in most species of caddis in the larval stage. The brushes are assumed to function in a similar manner, by sweeping food particles towards the mouth. Noting the sharply pointed apical teeth of the mandibles of *Wormaldia*, it can reasonably be assumed that any insect larva which is swept on to the net by the current is dealt with equally efficiently. Similar mandibles are found in *Philopotamus*.

When ready to pupate the larva leaves the net and constructs an elliptical pupal shelter of small stones, gravel, etc., held together by silk, the shelter being attached to a stone in the stream. Within the shelter a rather slight silken cocoon is formed, unlike the tough covering which is found around pupae of another campodeiform caddis, *Rhyacophila*, which makes a pupal shelter of similar construction.

Emergence of the adult is extremely rapid. On many occasions when collecting the cocoons of *Philopotamus*, the emergence of the adults from them has been observed in the field. The wings are extended rapidly and the insect can run quickly very shortly after the pupa reaches the water surface. This feature of a rapid emergence and activity immediately upon emergence is usual with caddis in general.

*Philopotamus* inhabits swift-flowing streams, and is particularly common where aquatic moss grows profusely on the stones in the water, indicating well-aerated conditions. Both species of *Wormaldia* are also found in the more torrential parts of small streams, especially in upland areas, but *W. occipitalis* at least, together with *Philopotamus*, also occur in lowland streams which flow through woodlands, even though the streams may not be torrential. All appear to prefer water with a rather low summer temperature. *Chimarra marginata* has been recorded by Mosely (1939) to occur by water in which aquatic moss grows on stones and boulders. The larva of this species is no doubt very similar to the others.

*Philopotamus* has a very long flight period, being recorded from the end of March to the end of September in Northern England. *W.*



Larvae of *Philopotamus* and *Wormaldia*.

*W. occipitalis* (Pict.): 1, head, dorsal; 2, pronotum; 4, mandibles; 5, labrum, ventral view; 9, anal appendage.

*W. subnigra* McLach. (after Philipson): 3, pronotum; 6, labrum, ventral view.

*P. montanus* (Don.): 7, head, dorsal; 8 pronotum.

*occipitalis* has occurred from June to October, with occasional records in April, whilst *W. subnigra* has been found from mid-July to October. *C. marginata* is chiefly found in July.

In the construction of a key to the known larvae, use has been made of the figures in Philipson (1953) for *W. subnigra*. Some details of the chaetotaxy of this species appear to differ from that of *W. occipitalis*, and since the examination of a series of the latter larvae suggest that the chaetotaxy is reasonably constant, these differences are used in the key. The main distinction between these two larvae, however, seems to lie in the ventral surface of the labrum. This in *subnigra*, according to Philipson, has the median area covered with teeth-like projections and bordered with strong short setae (fig. 6). In the *occipitalis* larvae examined, this part is more or less smooth, with a row of very small

teeth-like projections posteriorly and with two curved thickened borders anteriorly (fig. 5). This latter agrees with the description and figure in Nielson.

### Key to Larvae

1. Larger, up to 24 mm. in length, head broader in comparison to length, reddish or dark reddish; setae on head mostly short; fronto-clypeus narrow, its anterior margin emarginate and blackish, without long setae (fig. 7); disc of pronotum with one pair of long setae (fig. 8) ..... *Philopotamus montanus* (Don.)
- Smaller, up to 12 mm. in length, head narrower, yellow; setae on head long; fronto-clypeus broader, its anterior margin convex, not blackish, with long setae (fig. 1); disc of pronotum with two pairs of long setae (figs. 2, 3) ..... 2
2. Ventral surface of labrum with a median patch of teeth-like projections (fig. 6); anterior border of pronotum with long setae (fig. 3) ..... *Wormaldia subnigra* McLach.
- Ventral surface of labrum smooth, without a median patch of teeth-like projections (fig. 5); anterior border of pronotum with short setae (fig. 2) ..... *Wormaldia occipitalis* (Pict.)

### *Wormaldia occipitalis* (Pict.)

#### Description of full-grown larva

Size: 10-12 mm. in length, head elongated, narrow, yellow (fig. 1) labrum soft, whitish, anterior margin with median notch and with a dense row of setae; a second, less dense row of setae occur near to anterior margin ventrally. Longer setae occur on either side of labrum (fig. 5). Mandibles yellowish-brown, with two setae on external edge, internal edge with apical teeth and serrated on apical half. Pronotum sclerotised, yellow, with black posterior border, and chaetotaxy as fig. 2. Lateral margins bordered finely with black.

Legs yellowish, with fine setae apically on segments, and with short strong yellow setae elsewhere on coxae, femora, and tibiae. Tarsi of meso- and meta-thorax with fine spines distally.

Abdomen whitish or yellow, without abdominal gills, but with five anal gills. Anal appendages long, ending in strong curved claws (fig. 9).

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## *Egle parvaeformis* Schnabl (Dipt., Muscidae), a species new to Britain

By ADRIAN C. PONT

Amongst a series of *Egle* species taken at Oxwich, Glamorgan, on 10th April 1959 were three males that Mr. E. C. M. d'Assis-Fonseca kindly identified for me as the above species.

The fly is very closely allied to *Egle parva* Desv. and *E. minuta* Mg., all three species being between 3 and 4 mm. in length. It may be distinguished in the male sex by characters on the fifth sternite: in *parvaeformis*, the lobes and the posterior edge of the sternite are lined with hairs, and at the base are present two conspicuous tufts of long hairs; in *parva* these tufts are absent, whilst in *minuta* the whole sternite is bare and shining black except for some microscopic hairs at the tip of the lobes. The females can not at present be separated.

The specimens were taken on a sunny morning, shortly before a torrential rainstorm, on a path running between a spinney and the sand dunes just before Oxwich marsh. They were basking on the sand in company with other more usual Anthomyiinae, *Egle aestiva* Mg., *Delia intersecta* Mg. and *Nupedia dissecta* Mg.

Mr. Fonseca has also found a specimen in his collection taken at Bookham Common, Surrey, on 11th April 1950, and considers that the species may be quite frequent in coastal districts of the country but as yet unrecognised.

## Current Literature

*Faunula Lepidopterologica Almeriense* by Ramon Agenjo, Madrid, 1952. Owing to an unfortunate miscarriage of post, I did not receive the copy kindly sent to me by the author in 1954, but he has now been good enough to send me a replacement copy of this important work.

It deals very thoroughly with the Province of Almeria from the angle of lepidopterology, and is divided into four main parts and a fine collection of plates. The first part is subdivided into an introduction outlining the setting up of the author's expeditions, the next part describes the province, dealing with boundaries, physical geography, geology, climate, and means of travel, and finishes with a list of the localities cited in the treatise with height above sea level and distance from the town of Almeria. The third section deals with entomologists who resided in the province, their journeys and their captures. Then follow sections dealing respectively with the expeditions of 1942 and 1948. The final part of the first section deals with the scientific results of the expeditions and tabulates the number of species taken under their genera. The results are further tabulated to give such details as new genera, sub-genera, species and forms, followed by genera and species new to Europe, new to Spain, and finally new to Almeria.

The second part deals with the species systematically, with distributional maps of Spain in the case of many insects. The third part consists of a list of the species with page references and part four consists of a bibliography and explanation of the plates.



Finally, the plates are inserted, and these consist of a detailed map of the Province of Almeria followed by two plates showing eight half-tone photographs of various biotopes. These are followed by five coloured plates of the species taken, and finally come seventeen plates of genitalia dissections of both sexes and other physical details of the new species, etc, found.—S. N. A. J.

From Dr. Agenjo I have also received separates of other papers recently produced. These include *The Tribes and Sub-tribes of the Sub-family Phycitinae Cotes, 1899*, dated 15th October 1958. This consists of 4 pp. and furnishes a useful basis for working on this sub-family. The next, *Spanish sub-species of Lymantria monacha L., 1959*, with a coloured plate showing 15 races. One from *Graellsia*, XVII, 1959, deals with *Ectomyelois ceratoniae* Zell., a pest of dates and locust beans, as a field pest of oranges, and from *Eos*, XXXV, 31.xii.1959, on the *Catocala* species of Spain, with remarks on their relation to forestry. This consists of a key to the genera of the Noctuidae, and a key to the Catocalid species, with associated diagrams showing wing pattern. There are maps of Spain showing distribution of each species mentioned and six plates of male and female genitalia dissections.—S. N. A. J.

*The Journal of the Lepidopterists' Society*, 132, 12.ii.1960, has an article by I. F. B. Common of the C.S.I.R.O., Canberra, describing a modification of the Robinson trap whereby the intake of coleoptera, especially Scarabaeidae, which are inclined to ruin the more delicate insects in the trap, are diverted to another chamber, by the use of concentric inner and outer trays. The scarabs crawl round and fall through an opening into a lower chamber, but the lepidoptera, etc., fly to the outer tray and settle down there. There is a record by A. C. Sheppard, of Montreal, of *Caradrina morpheus* Hufn. as a new species in North America, giving a list of records from Montreal and various localities in British Columbia. For collectors, E. P. Wiltshire writes his first impressions of the tropical forests of south-eastern Brazil, and their lepidoptera. G. W. Byers, of the Department of Entomology, University of Kansas, describes a home-made portable mimeograph for making labels in the field. Other contents include an account of a quick collecting visit to Texas, another on collecting *Incisalia mossii* H. Edwards (Lycaenidae) in Vancouver Island, and another deals with *Erebia* species in the European alps. There is also a further list of records of current literature.—S. N. A. J.

*Lambillionea*, 59, 7-8, 25.viii.1959, carries records of three lepidoptera new to Belgium: *Cherosotis margaritacea* Villiers at light, Wavreille, 22/26.viii.1959 (several examples); *Eublemma parva* Hubn., one at light, 7.vi.1958, Wavreille, and *Apamea lucens* Frr. with ♂ genitalia dissections of *H. lucens* and *H. oculate* L. H. de Lesse discusses the use of the name *Agriodictus iphigenia* H.S., with a half-tone text photograph illustrating 15 specimens. Cdt. M. Ruwet of Liege writes on breeding *Eriogaster lanestris* L., and L. Scarlet continues his notes on lepidopterous ova. In Parts 9-10, 25.x.1959, E. Janmouille adds *Coleophora caespititiella* Zell. and *C. tamesis* Waters to the Belgian list. E. de Laever of Liege gives a short account of a day and night collecting expedition to Torgny, and also of a collect-

ing trip to Wavreille in June 1958. L. Scarlet continues his ova paper. Parts 11-12, 25.xii.1959, carry an obituary of C. L. Collenette of the B.M.; P. Viette of Paris describes two new Pyrales from Indo-China, *Stemmatophora chapalis*, and *Doddiana tonkinalis* with ♂ genitalia figures. L. A. Berger writes on some African HesperIIDae in the Paris Museum; Dr. P. Houyez writes on techniques for the preparation of hairy larvae and those whose hairs are liable to become detached; he also discusses a technique for evisceration by suction. There is a further portion of L. Scarlet's paper. Vol. 60, 1-2, 25.ii.1960, commences with a detailed summary of the 1959 weather by P. Marechal of Liege. E. Janmouille writes on the larva of *Maculinea rebeli xerophila*, B. C. Dufay adds *Nycteola (Sarothripus) asiatica* Krul. to the Belgian fauna after examining the series of *Nycteola* at the Institut Royal. L. A. Berger writes on Congonian HesperIIDae and P. Viette on the standing of the genus *Morpho* Fab. The Scarlet paper is continued and E. de Laever writes on *Sterrhia incisaria* Staud. and *S. mareotica* Draudt. In parts 3-4, 25.iv.1960, C. Herbulot contributes an account of the Geometrid family *Asthenotricha* from Madagascar, including descriptions of two new species, a key to the species, a note on their geographical distribution in Madagascar, and notes on peculiar structural characters. There is a list of interesting species taken by the "Cercle des Entomologistes liegeois" including Hemiptera, Lepidoptera, Diptera and Hymenoptera. L. Scarlet writes on the ova of *Thersamonnia dispar* Haw. with four half-tone microphotographs, and E. Janmouille contributes a note on the standing of *Mompha lacteella* Steph. as a Belgian insect; he also comments on current happenings.—S. N. A. J.

*Zeitschrift der Wiener Entomologischen Gesellschaft*, 70, pt. 9, 15.ix.1959. Leo Siedler of Klagenfurt describes two new Psychids: *Sciopteris amseli* from Afghanistan and *Peloponnesia megaspilella* from Greece, setting up a new sub-family and genus for the latter. There is a plate figuring the ♂, an enlarged view of the antenna, and a line drawing of the ♂ genitalia of *S. amseli*, and four ♂ adults and four larval cases of *P. megaspilella*. Eduard Schutze continues his study of Eupithecia (xii) with a paper on Tripolitania describing four new species, *jefrenata*, *floriata*, *tripolitaniata* and *subextremata*, with a plate illustrating ♂ and ♀ adults and two pages of genitalia dissections, also a text figure of ♂ and ♀ genitalia of *E. extremata*. Rudolf Löberbauer continues his notes on the macrolepidoptera of the Traunstein district.

70, pt. 10 of 15.x.1959 has a note by Dr. Walter Hayek on the lepidoptera of Hirschenstein; Charles Boursin continues his work on the Noctuidae-Trifinae, describing a new form of *Euxoa (Chorizagrotis) drewseni* Stgr. from Greenland which he names *pseudovittata*; there is a plate showing the typical form, the new form, and the ♂ genitalia of this and allied species. R. Löberbauer continues his Traunstein list.

70, pts. 11/12; 15.xii.1959. Jacques F. Aubert writes a full account of the genus *Entephria*, setting up two new species, *E. luteolata* and *E. albipunctata*, with three plates of adults and two of genitalia dissections. There are also text figures of ♀ genitalia. R. Löberbauer completes his list of the Traunstein macrolepidoptera.—S. N. A. J.

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4 Vols., 1891. "Tineina", Stainton, 1854. "British Tortrices", Wilkinson,  
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(Founded by J. W. TUTT on 15th April 1890)

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Insects

# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

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# Spring Butterflies in Cranleigh, 1960

By Major A. E. COLLIER

After seeing so many imagines of *Thecla betulae* L. in the late summer of 1959, I was surprised to find the eggs, if anything, rather less plentiful than usual, but a greater percentage were fertile, and by early June most of the larvae, brought from their sleeves into a cool room when nearly full grown, had pupated or were changing colour.

Early in March an inspection of my three colonies of *Euphydryas aurinia* Rott. revealed sixty-three clusters of larvae in the first, six in the second, and only four in the third, which had reached the top of its form in 1957 and 1958. The inhabitants of these colonies spring from a pair taken in a Silverstone wood in 1949.

In the first colony I put down a few hundred larvae in 1952. A few were seen flying later that year, and in 1953 and 1954 I counted over a hundred on the wing on 31st May, and on 2nd March 1955 I counted forty-three nests, and on 14th April there were so many larvae in the five-acre field that it was difficult to avoid walking on them.

In May and June there were many minor and a few major aberrations among a profusion of butterflies.

In early March 1956 I counted 300 nests of larvae, nearly all of them situated in the south-west half of the field, although the other half was very sheltered and carried a great crop of scabious. By early April they had stripped the plants completely and their numbers had dwindled to such an extent that only by burrowing under the long grass to a closely nibbled scabious root was it possible to find a larva, waiting for its dinner to grow.

I was surprised to see no signs of the traditional mass migration, and the thousands of plants in the north-east end of the field, and round the borders at the edge of the forest, remained practically untouched.

This great mortality almost wiped out the population, and it is only now, after several years, that it is beginning to recover. Unfortunately, the scabious plants, which were eaten to the quick, have not recovered, and if there were to be a repetition of 1956 it would be necessary to remove a great number of the nests to other localities to give the remainder a reasonable chance of survival. The position will probably be apparent in late August and it is possible that other collectors might welcome some new recruits to their local colonies.

On 20th April I saw my first *Pararge aegeria* L. and *Anthocaris cardamines* L. The latter began well, but have an unfortunate habit of timing their arrival to coincide with the blackthorn winter, and this year was no exception. It always surprises me that after a long series of cold days, during which only an occasional *cardamines* is seen, it is always possible to find eggs, usually in plenty, on most patches of cuckoo flower.

On 21st April a visit to Chiddingfold wood in search of larvae of *Limenitis camilla* L. was unsuccessful. I rather suspect that their absence here and in other woods may be partly due to last year's drought. It was noticeable in September that the honeysuckle in the local woods appeared to be wilted past recovery, and although this has not proved to be the case, the condition of the leaves may well have been the cause of great mortality among the larvae.

On this day *Celastrina argiolus* L. put in one of its very rare appearances, and an occasional *Pieris napi* L. was seen after a very cold spell with severe night frosts. 3rd May ushered in a warm spell and butterflies began to appear in some numbers.

4th May produced the first *Pyrgus malvae* L. followed by *Argynnis euphrosyne* L., *Leptidia sinapis* L. and *Coenonympha pamphilus* L. on the 8th, *Erynnis tages* L. on the 10th, and *Pararge megaera* L. on the 11th. *L. sinapis* was only seen occasionally and *euphrosyne* was in smaller numbers than expected. In two localities only it had increased noticeably in numbers, but without any sign of variation, and a cold spell in the middle of May caused it to vanish almost overnight, with the exception of worn females which could be seen going about their duty until well into June. *Pamphilus* was as usual, ubiquitous and in great numbers, and yet I find it a difficult larva to bring through the winter.

23rd May saw *Argynnis selene* L. emerging together with *Lycaena phlaeas* L., the latter proving to be far more numerous than for many years, the result, presumably, of the great show they made last year.

*A. selene* took full advantage of fifteen days of hot and fine weather, and numbers in most cases appeared to be up on 1959, but there was singularly little evidence of even very minor variation. I missed the first emergence of *aurinia* and a visit to the field on 23rd revealed a great number of males, mostly in perfect condition, together with quite a few females. The great variety of beautiful colour forms made me wish that I were a beginner collecting a first series. The hindwing border, characteristic of the original Silverstone parents, was much in evidence. During the following fourteen days of fine hot weather it required great care to avoid treading on mating couples and ovipositing females. Flying amongst the *aurinia* were a sprinkling of *selene*, an occasional *Callophrys rubi* L., a very fair number of *Polyommatus icarus* Rott., whose females this year in the woodland areas appear to be generally very blue, and swarms of *pamphilus*.

When the more showy butterflies present little variation, I find *pamphilus* a great consolation. To examine them carefully and thoroughly can be a most absorbing and interesting job, resulting in the discovery of unsuspected minor and major variations.

On the north downs on 27th May *Lysandra bellargus* Rott. was well out. In spite of grazing and occasional over-collecting they manage to survive, and with the wealth of *Hippocrepis comosa* on most of the slopes they might, if given a fair chance, become as numerous as they were not very long ago.

*Ochlodes venata* Br. and Grey made its appearance on the 30th, but up to the present date I have only seen one *Aricia agestis* Schf. and no examples at all of *Hamearis lucina* L.

The whites have been noticeably scarce, apart from an occasional *P. napi*; *P. rapae* L. has not yet been seen, and it is many years since *P. brassicae* L. has been a problem in my vegetable garden.

Migrants and hibernators have been even rarer than usual this year with the exception of *rhamni*, which has never in my experience been so plentiful.

I have seen so far three *Aglais urticae* L., two *Nymphalis io* L., one *Vanessa atalanta* L., and no *V. cardui* L. *Polygonia c-album* L. were,



however, more plentiful than I expected after their absence in the Autumn.

The most disturbing feature is the continued scarcity of *urticae*, whose numbers apparently remain undiminished in other parts of the country. In the past two years I have only come across one nest of larvae, and I can only assume that the standard of farming by our Surrey business executives is too high for the comfort and wellbeing of the lepidoptera.

There is a rough field of about two acres not far from Cranleigh. Owing to its almost undrainable position it has escaped cultivation for many years and has been a mass of rough grasses, reeds, knapweed and other flowers, surrounded on all sides by banks of bramble and forest trees. I discovered this field in 1952 when it was swarming with *jurtina*, *hyperantus*, *pamphilus* and *venata*, with *camilla*, *paphia* and *c-album* to be found occasionally on the brambles. For six years I have released my redundant *lanceolata* and their near relatives in this field, and year after year the result of my releases has been apparent. A visit on 9th June to check up on the position of *jurtina* revealed devastation and desolation. Every growing thing had been cut down to ground level and the resulting mess left to rot. So passes one more of the many delectable hunting grounds near Cranleigh which have been destroyed in the past nine years.

## Mercury Vapour Trap Records at Morecambe, 1959

By C. J. GOODALL, M.B., B.S.

After a period of nearly twenty years during which my interest in entomology had been at a low ebb, a medical colleague well known as an authority on the lepidoptera of this area persuaded me again to take up the study of this fascinating, though probably overstudied, Order.

Fortunately I had preserved the bulk of the collection made in my younger days and had occasionally added to it specimens taken during holidays abroad, as on these occasions the sight of various well-remembered species regarded as rarities in Britain temporarily rekindled my interest. After the first such occasion I always had the foresight to take with me a few items of collecting equipment.

Following this resurgence of my enthusiasm I acquired some new apparatus. This included a Robinson mercury vapour trap, which I operated in my garden on most suitable nights throughout the season. Considering everything, I have had a most encouraging and successful year, and my old collection is now scarcely recognisable, so many have been the additions and replacements.

Before listing the species visiting the trap a description of the area concerned is necessary. As is well known, Morecambe is a seaside holiday resort situated at the south-eastern corner of Morecambe Bay and built largely on reclaimed salt-marsh. It is thus a flat and rather uninteresting district with few trees, and on the outskirts large expanses of grazing land and meadows.

North-west Lancashire does not in any way resemble the industrial part of the county further south; indeed, the country north of Preston is largely rural. The climate is, on the whole, mild, with a minimum of frost and snow during the winter months, though the summers are

apt to be wet and cool and gales are frequent, owing to the prevailing south-westerly winds and procession of depressions passing between western Scotland and Iceland.

My house and garden are situated near the centre of the town, which has a long frontage on the coast, but comparatively little width. Fortunately, however, we are very near open areas on two sides, to the north and east. These consist of school playing fields and nearer, to the east, a piece of common land beyond which were, until the middle of August, neglected allotments. These contained a large variety of wild plants together with remnants of former cultivation. A small stream crossed this area, on the banks of which grew Great Reed (*Phragmites communis*) in considerable quantities. Surrounding the outskirts of this area are well-tended allotments and also a few small waste plots of rough grass bordered by stunted trees of hawthorn, elder, and ash. The whole area is about a quarter of a square mile in extent. Along the southern border runs a railway line, while the north is bounded by the promenade and sea. It is surrounded by urban development, though most of the houses have fairly extensive gardens.

Low-growing plants and bushes beside those already mentioned included field bindweed (*Convolvulus arvensis*), bramble, buttercup clover, various currant bushes, curled dock (*Rumex crispus*), goldenrod (*Solidago virgaurea*), hog-weed (*Heracleum sphondylium*), stinging-nettle (*Urtica dioica*), mugwort (*Artemisia vulgaris*), plantain (*Plantago major* and *P. lanceolata*), ragwort (*Senecio jacobaea*), raspberry, marsh thistle (*Cirsium palustre*), willow-herb (*Epilobium*), and yarrow (*Achillea millefolium*).

Unfortunately, much of the area has now been acquired as additional playing fields by the nearby school, and large-scale burning, clearance, and drainage of the waste area has been carried out, beginning about 20th August. The old stream which supported the bulk of the reeds has been replaced by a pipe-line. The result of this extensive destruction of potential food-plants will be watched with interest during 1960. The local Council has made matters worse by providing competition in the form of numerous mercury vapour street lamps in our immediate vicinity.

The garden itself is small and contains a few apple and pear trees, as do surrounding gardens; there is a privet hedge on three sides and a hawthorn one on the fourth. A nearby garden contains one or two black poplar trees, and there are the usual wild cherry and other ornamental trees and shrubs in the vicinity.

The m.v. trap was first operated on the night of 24th-25th April. Apart from the second week in June and most of September, when I was on holiday, it was in action during all suitable nights until early November, when several successive nil catches made it obvious that nothing further was likely to be obtained.

At first no means of quietening specimens when examined in the morning was used, but as the temperatures rose it was found that many had damaged themselves by restless activity. A pledget of cotton-wool soaked in chloroform was therefore dropped into the trap and left for some minutes before an examination was made. Later a simple "vaporiser" was introduced, consisting of a small bottle half-filled with chloroform and containing a wick which protruded from the neck, on the principle of various well-known domestic deodorising systems. This

worked quite well, and very few specimens appeared to have been restless enough to damage themselves.

Birds constituted a further hazard, especially blackbirds, thrushes, and house-sparrows, which during the nesting season did not hesitate to enter the trap once the light had been switched off and play havoc with the catch. The answer to this was to leave the lamp on until I was able to get to the trap to examine it. This, however, did not prevent them attacking specimens resting on the area of lawn surrounding the trap. Nevertheless, once the rearing of young had been completed, they seemed to lose interest.

Apart from the few specimens taken for the collection, all were placed in a large wooden box which was then inverted over a piece of rough ground, so that they were safe from attack by birds during the day and could crawl from beneath it at dusk.

There now follows a list of all species of macrolepidoptera noted in the trap. Microlepidoptera were also noted and samples taken, but my knowledge of these is not yet sufficient to make firm identifications, so they will not be mentioned here. Total numbers varied considerably, but in July and August several hundreds were present every night. In each case the date of first appearance is given.

#### SPHINGIDAE.

*Laothoe populi* L.: May 9th to early June. Fair numbers.

#### NOTODONTIDAE.

*Harpyia furcula* Cl.: August 11. 1 only, on ground near trap. Late appearance, but condition fair.

*Pheosia tremula* Cl.: May 27th. 1 only. Rather late, but condition good.

*P. gnoma* Fab.: 1st brood, May 26th to mid June; rather late. 2nd brood, July 19th to mid August. Fair numbers from both broods.

*Notodonta ziczac* L.: August 7th and 8th. 2 only. Rather late, but condition of both fair.

*N. dromedarius* L.: August 7th and 8th. 2 only. Rather late, but condition good.

*Lophopteryx capucina* L.: June 4th. 1 only. ? late 1st or early 2nd brood. Condition fair.

#### THYATIRIDAE.

*Thyatira batis* L.: May 30th. Condition good. 1 only.

*Tethea duplaris* L.: May 27th. Early. 2 only. Dark forms. Condition fair.

#### LYMANTRIIDAE.

*Euproctis similis* Fues.: July 8th to end of July. Fair numbers.

#### DREPANIDAE.

*Drepana falcataria* L.: August 21st. 1 only. Condition good.

*Cilix glaucata* Scop.: July 21st to mid August. Numerous. None from earlier broods.

## ARCTIIDAE.

## NOLINAE.

*Nola cucullatella* L.: June 28th to early July. A few.

## LITHOSIINAE.

*Eilema lurideola* Zk.: July 27th to late August. Rather late appearance. A few.

## ARCTIINAE.

*Spilosoma lubricipeda* L.: May 23rd to late June. Numerous.

*S. lutea* Hufn.: May 14th to late June. Early appearance. Numerous.

*Arctia caia* L.: June 24th to late July. Numerous.

## AGROTIDAE.

## AGROTINAE.

*Euxoa cursoria* Hufn.: August 7th. 1 only. Worn.

*E. nigricans* L.: July 23rd to end August. Rather late appearance. Single specimens.

*Agrotis segetum* Schf.: May 31st to late June. Fair numbers.

*A. exclamationis* L.: 1st brood, May 28th to mid July. 2nd brood, September 2nd to early October. Very numerous.

*A. ipsilon* Hufn.: 1st brood, May 14th to early June; late appearance. 2nd brood, July 19th to mid October. Numerous.

*Lycophotia varia* Vill.: June 24th to end of July; rather late appearance. A few.

*Actebia praecox* L.: August 22nd. Condition fair. 1 only.

*Graphiphora augur* Fab.: June 20th to late July. Fair numbers.

*Diarsia festiva* Schf.: May 26th to early July. Numerous.

*D. rubi* View.: 1st brood, May 11th to mid June; early. 2nd brood, July 22nd to early October. Very numerous.

*Ochropleura plecta* L.: May 12th to mid June; numerous (1st brood). 2nd brood, August 11th to early September; a few.

*Amathes baia* Schf.: July 8th to mid August. Numerous.

*A. c-nigrum* L.: 1st brood, June 20th to mid July; late appearance. 2nd brood, August 30th to mid October. Numerous.

*Amathes triangulum* Schf.: June 17th to mid July. Numerous.

*A. xanthographa* Schf.: August 5th to early September. Very numerous.

*Axylia putris* L.: May 11th to end of June; rather early. Numerous.

*Triphaena comes* Hb.: July 23rd to end of August; rather late. A few.

*T. pronuba* L.: June 17th to mid October. Very numerous.

*T. ianthina* Schf.: August 2nd to end of August; late appearance. A few.

*T. interjecta* Hb.: August 20th and 22nd. 3 only. Condition fair.

*Cerastis rubricosa* Schf.: May 8th. 1 only. Condition fair.

*Phalaena typica* L.: June 21st to mid July. Single specimens.

## HADENINAE.

*Mamestra brassicae* L.: May 14th to early August; rather early appearance. Numerous. No Autumn brood.

- Melanchra persicariae* L.: May 26th to late July; early appearance. Very numerous.
- Diataraxia oleracea* L.: 1st brood, May 8th to early July; early appearance. Numerous. 2nd brood, 11th August to early September. A few.
- Ceramica pisi* L.: May 30th to mid July. Fair numbers.
- Hada nana* Hufn.: May 23rd. 1 only. Worn.
- Hadena trifolii* Hufn.: August 19th. 1 only. Condition fair.
- H. w-latinum* Hufn.: June 4th to late June. Single specimens.
- H. suasa* Schf.: May 30th. 1 only. Condition good.
- H. thalassina* Hufn.: May 27th to late June. A few.
- H. serena* Schf.: June 24th. 1 only. Rather worn.
- H. conspersa* Schf.: May 26th and July 25th. 2 only. Condition good.
- H. bicruris* Hufn.: May 14th to late June; rather early. A few.
- H. cucubali* Schf.: 1st brood, July 8th to mid July; rather late. 2nd brood, 7th August to end of August. A few.
- H. lepida* Esp.: July 22nd. 1 only. Condition good. Dark form.
- Orthosia gothica* L.: April 24th to end of May. Very numerous.
- O. stabilis* Schf.: April 24th to mid May. Fair numbers.
- O. incerta* Hufn.: April 24th to mid May. Fair numbers.
- O. gracilis* Schf.: April 24th to mid May. Numerous.
- Cerapteryx graminis* L.: July 8th to mid August. Fair numbers.
- Leucania pallens* L.: June 24th to early August. A few.
- L. impura* Hb.: June 28th to late August; rather early. Numerous.
- L. comma* L.: June 21st to early July; rather late. A few.
- L. lithargyria* Esp.: June 28th to early August. Fair numbers.
- L. conigera* Schf.: July 8th. 1 only. Condition good.

## CUCULLIINAE.

- Allophytes oxyacanthae* L.: October 1st to late October. Numerous. 30% var. *capucina* Mill.
- Gripesia aprilina* L.: October 5th. 1 only. Condition good.
- Eumichtis adusta* Esp.: May 23rd to mid July; late appearance. Fair numbers.
- Antitype chi* L.: August 8th to end of August. Single specimens.
- Agrochola lota* Cl.: October 3rd to mid October. Fair numbers.
- A. lychnidis* Schf.: October 1st and 2nd; rather worn. 2 only.
- Anchoscelis litura* L.: October 1st; condition fair. 1 only.
- Cirrhia icteritia* Hufn.: August 4th to early October; early appearance. Single specimens.

## ACRONYCTINAE.

- Cryphia perla* Schf.: June 17th to mid August; rather early. Numerous.
- Apatele leporina* L.: June 24th. 1 only. Condition fair.
- A. psi* L.: May 15th to end of July; rather early. Numerous.
- A. rumicis* L.: 1st brood, May 12th to end of June; numerous. 2nd brood, 21st August; 2 only.
- Craniophora ligustri* Schf.: June 24th; condition good. 1 only.

## AMPHIPYRINAE.

- Amphipyra tragopoginis* Cl.: August 5th to end of August; rather late. Numerous.

- Apamea lithoxylea* Schf.: June 20th to mid July. Fair numbers.  
*A. monoglypha* Hufn.: June 19th to late July; rather late. Numerous.  
Dark forms frequent.  
*A. crenata* Hufn.: May 15th to early August; rather early appearance. Numerous. 40% var. *alopecurus* Esp.  
*A. sordens* Hufn.: May 8th to end of June; early appearance. Numerous.  
*A. obscura* Haw.: May 26th to mid July. Single specimens.  
*A. secalis* L.: May 15th, 1 only. July 8th to late August; numerous.  
Mostly dark forms.  
*A. ophiogramma* Esp.: July 22nd to end of July. Single specimens.  
*Procus strigilis* Cl.: May 26th to end of July. Numerous. Dark forms frequent.  
*P. fasciuncula* Haw.: June 17th to mid July; rather late. Fair numbers.  
*P. literosa* Haw.: July 23rd to late August; rather late appearance. Numerous.  
*P. furuncula* Schf.: July 18th to end of August; rather late. Numerous.  
*Luperina testacea* Schf.: August 11th to early September. Numerous.  
All dark forms.  
*Euplexia lucipara* L.: May 13th to mid July; rather early. Fair numbers.  
*Phlogophora meticulosa* L.: May 26th to mid June; single specimens. 14th October, 1 worn specimen.  
*Thalpophila matura* Hufn.: July 22nd to mid August. Single specimens; worn.  
*Laphygma exigua* Hb.: July 8th. 1 only. Condition fair.  
*Petitampha minima* Haw.: July 18th. 1 only. Condition good.  
*Meristis trigrammica* Hufn.; June 2nd and 3rd. 2 only. Condition good.  
*Caradrina morpheus* Hufn.: May 27th to end of July. Numerous.  
*C. alsines* Brahm.: July 8th to mid August. A few.  
*C. blanda* Schf.: June 19th to mid July; rather late. Fair numbers.  
*C. claripalpis* Scop.: May 27th to mid October. Numerous.  
*Hydraecia oculatea* L.: July 26th to end of August. Single specimens.  
*H. micacea* Esp.: July 21st to mid October; rather early appearance. Numerous.  
*H. petasitis* Dbld.: August 22nd. 1 only. Condition fair.  
*Gortyna flavago* Schf.: August 21st to early September; late appearance. Numerous. Mostly small specimens.  
*Pyrrhia umbra* Hufn.: June 19th. 1 only. Condition good.  
*Cosmia trapezina* L.: August 7th and 11th. 2 only. Condition good.  
*Rhizedra lutosa* Hb.: August 29th to October 17th. Single specimens.  
*Arenostola pygmina* Haw.: August 24th and 28th. 2 only. Condition good.  
*A. phragmitidis* Hb.: July 23rd to mid August; rather late appearance. Fair numbers.  
*Nonagria typhae* Thun.: August 22nd; 1 only; condition good. October 4th and 9th; 2 only; worn.

## PLUSIINAE.

- Polychrisia moneta* Fab.: June 28th and July 23rd. 3 only. Condition fair.

*P. chrysitis* L.: June 17th to early September; early appearance. Numerous.

*P. bractea* Schf.: June 24th. 1 only. Condition good.

*P. festucae* L.: 1st brood, June 17th to mid July; rather late; fair numbers. 2nd brood, August 11th to early September; a few.

*P. iota* L.: July 8th to end of July. A few.

*P. pulchrina* Haw.: May 27th to mid July. Numerous.

*P. gamma* L.: 1st brood, May 14th to early June. 2nd brood, July 8th to late October.

*Abrostola triplasia* L.: May 27th to mid July; fair numbers. August 18th; 1 only.

*A. tripartita* Hufn.: May 14th to mid July; rather early appearance. Fair numbers.

#### OPHIDERINAE.

*Rivula sericealis* Scop.: July 23rd to mid August; late appearance. Fair numbers.

#### HYPENINAE.

*Hyppena proboscidalis* L.; July 8th to end of July. A few.

*Zanclognatha tarsipennalis* Tr.: June 28th; several. September 3rd; 1 only; ?? example of infrequent 2nd brood. Condition of all good.

*Z. grisealis* Schf.: May 27th to late July. A few.

#### GEOMETRIDAE.

##### GEOMETRINAE.

*Pseudoterpna pruinata* Hufn.: July 18th. 1 only. Rather worn.

##### STERRHINAE.

*Sterrhra aversata* L.: June 24th to end of July; late appearance. Fair numbers.

##### LARENTIINAE.

*Xanthorhoe ferrugata* Cl.: 1st brood, May 8th to early June. 2nd brood, July 8th to end of August. Numerous. 3rd brood, October 1st. 1 only.

*X. fluctuata* L.: May 13th to early September. Fair numbers. Ab. *costovata* Haw. 1 specimen, August 22nd.

*Ortholitha chenopodiata* L.: August 5th. 1 only. Worn.

*Colostygia didymata* L.: August 6th. 1 only. Worn.

*Anticlea derivata* Schf.: May 15th. 1 only. Condition good.

*Perizoma alchemillata* L.: July 23rd. 1 only. Worn.

*Electrophaes corylata* Thun.: May 12th to mid June; early appearance. A few.

*Pelurga comitata* L.: July 8th to mid August. Fair numbers.

*Lygris testata* L.: August 21st. 1 only. Condition fair.

*L. populata* L.: July 8th to mid August. A few.

*L. mellinata* Fab.: June 24th to mid August. Numerous.

*Cidaria fulvata* Forst.: July 1st to end of July. Single specimens.

*Dysstroma truncata* Hufn.: 1st brood, May 26th to early June; a few. 2nd brood, August 2nd to early September; fair numbers. Mostly dark forms.

- Epirrhoe alternata* Müll.: 1st brood, May 9th to early June. 2nd brood, August 11th to early September. Fair numbers.  
*Eupithecia centaureata* Schf.: June 19th to early August. Single specimens.  
*E. icterata* Vill. ssp. *subfulvata* Haw.: August 2nd to late August; late appearance. A few.  
*E. succenturiata* L.: July 8th to early August. Single specimens.  
*Oporinia dilutata* Schf.: October 9th to 14th. Single specimens. All *ab. obscurata* Staud.

#### BOARMIINAE.

- Abraxas grossulariata* L.: June 20th to late August; rather early. A few.  
*Cabera pusaria* L.: June 4th to mid June; rather late. A few.  
*C. exanthemata* Scop.: August 18th. 1 only. Condition fair.  
*Ennomos quercinaria* Hufn.: August 24th. 1 only. Condition good.  
*Deuteronomos alniaria* L.: August 6th to early September; rather early appearance. Numerous.  
*D. erosaria* Schf.: August 22nd. 1 only. Condition fair.  
*Selenia bilunaria* Esp.: 1st brood, April 24th to mid May. 2nd brood, July 15th to mid August. Numerous.  
*Gonodontis bidentata* Cl.: May 12th to early June. Fair numbers.  
*Colotois pennaria* L.: October 5th to November 2nd. Single specimens.  
*Crocallis elinguaris* L.: July 18th to mid August. Numerous.  
*Oncophanes sambucaria* L.: June 24th to late July. Fair numbers.  
*Opisthograptis luteolata* L.: May 13th to early September; late appearance. Numerous.  
*Epione repandaria* Hufn.: July 26th. 1 only. Worn.  
*Itama wauaria* L.: July 15th to late August; rather late appearance. Fair numbers.  
*Biston betularia* L.: May 14th to early July. Numerous. Nearly all *ab. carbonaria* Jordan.  
*Alcis rhomboidaria* Schf.: June 20th to end of August; rather early. Numerous. Mostly dark forms.  
*A. repandata* L.: June 17th to end of July; rather late appearance. Numerous. Mostly dark forms.  
*Chiasma clathrata* L.: 1st brood, May 15th to mid June. 2nd brood, August 7th to end of August. Single specimens.

#### HEPIALIDAE.

- Hepialus humuli* L.: May 30th to mid July. Single specimens; all females.  
*H. lupulinus* L.: May 31st to late June. Single specimens.

#### DISCUSSION.

A total of 162 species was noted. Of these, however, 42 species occurred as single specimens on only one or two occasions, and a further 38 singly on various nights over a period. These must probably be regarded as having come from outside the immediate vicinity, so that local residents amount to only 80 species.

However, it has been noticed that Geometers do not enter the trap to anything like the same extent as Noctuids. It has been suggested that this may be due to the fact that, although attracted to M.V light,



they do not fly round the lamp as do moths of other orders, and hence are not deflected into the trap by the vertical vanes. The absence of certain very common species of Geometers and the infrequent occurrence of others in the trap may thus be explained.

The dates on which various species first appeared are interesting. A total of 21 species occurred from two to four weeks earlier than the average. On the other hand, 18 species were up to three weeks late (the latter were counted only from those which occurred frequently and in some numbers). The early appearances can be related to the unusually favourable weather conditions of 1959, but the late species are more problematical. However, many of the latter have until recently been regarded as exclusively southern species, and hence the accepted times of appearance given in the text-books relate to the south of England. One would expect, therefore, that in the north they would be somewhat retarded.

Melanism was prominent, in spite of the relative absence of large industrial undertakings in the district. This suggests that more movement of individuals of non-migrant species takes place than is usually recognised, and that the genes concerned have infiltrated the area by gradual passage through a number of generations from the industrial part of the county which begins about 20 miles to the south. In some cases, such as *Biston betularia* L., *Alcis rhomboidaria* Schf., and *Alcis repandata* L., the melanic forms appear to have almost replaced the types. An explanation is still required, however, as to why these forms have managed to become predominant in spite of their apparent lack of relative advantage in an area where smoke-pollution of resting surfaces is an exception. Indeed, they would seem to be at a positive disadvantage.

I hope next year to publish a further list covering the 1960 season, in which changes due to the recent alterations in the environment will be noted and examined.

2 Derwent Avenue, Morecambe, Lancs.

## Any Answers?

By A YOUNG MOTH HUNTER

I thank Mr. Allen for his timely protest in the recent *Record* and feel that there cannot be a single reader who does not share his fears. How increasingly ironical it is that Man should have labelled himself sapiens! The very fact that we read the *Record* implies, I think, that we have in common a certain basic attitude to existence which will necessarily be horrified by the apparently inevitable desecration of the countryside. Is it, in fact, inevitable, an incurable disease? Can we not, as a body, be more *actively* indignant about the way things appear to be going? What worries me is that it may be fruitless protesting *to each other*, because we all know only too well already how much there is to lose.

But does the man-in-the-street either notice or care when a rare species of insect becomes extinct, or when a bit more ancient forest is felled? I am quite sure that the answer is "No". Homo "sapiens" is just as happy among the spruces as the oaks, and his enjoyment varies

inversely with the number of insects anyway. In the sterile atmosphere of materialism is it not probably quite debatable whether insects and ancient forests are necessary at all? Who is to be so sure that the Forestry Commission's policy is shortsighted? They are, when all's said and done, growing wood. I can so easily hear Big Brother saying, "Why *are* these chaps making such a fuss?" If we must justify the fuss we make, surely no argument is better than that we happen to *like* insects and ancient forest?

Complacency will certainly get us nowhere, but nor will ignorance. There may be good answers to our angry protests, and there might even be a little reassurance in knowing some *facts*. Who can tell? Various questions come to mind at random, and I intend to write them down in the hope that they will find a reader who is in a position to answer them. I am simply asking for information.

1. Who *is* the Forestry Commission? What is its structure? Is any *one* person responsible for its actions? If so, who is he?
2. What is the broad policy? What factors decide reafforestation with conifers? When a mature hardwood tree is felled is it replaced by sufficient young ones to ensure that its place is ultimately filled again?
3. Can the woodland situation in, say, fifty years' time be predicted and described.
4. What are the plans? Is there public access to the details concerning condemned woodland? i.e., can we find out what is likely to go next?
5. What is the ratio of conifer/deciduous planting at the moment?
6. Why was Hell Coppice annihilated? Many of the oak trees in it seemed to me to have been young and sound.
7. Is *new* deciduous forests ever thought of these days?
8. Why is there such a demand for spruce, larch, etc? What is the wood used for, and who buys it?
9. Does the Government require the Forestry Commission to show a profit each year? ("Or else . . . !") Is the justification for planting conifers purely financial? ("They give a very quick yield, you know . . .") If not, what other reasons are there?
10. What crop can you grow where conifers have once grown, and how soon?

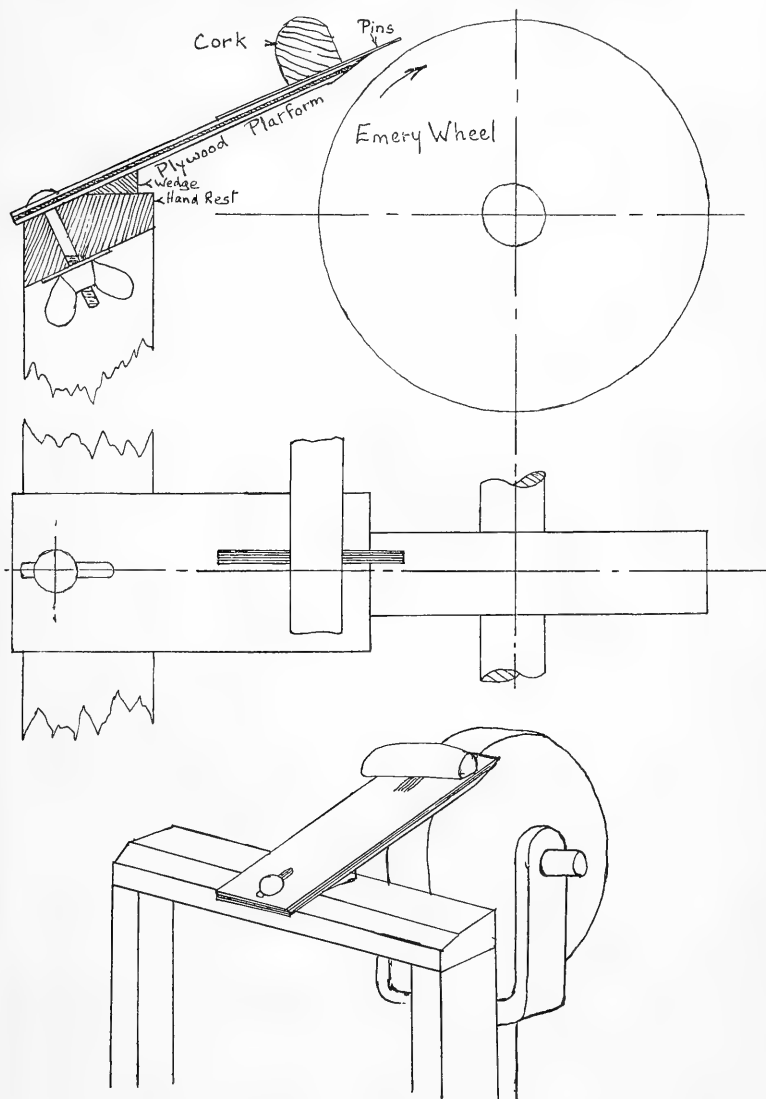
## On Making Stainless Steel Pins

By S. N. A. JACOBS

Mr. Huggins's interesting note on the various types of pin used for pinning microlepidoptera (antea: 141) turned my mind back to the days just before and during the war when I made my own pins and I may say that I am still using the product of those days of industry.

Young microlepidopterists may be interested to know how to point these fine pins which might prove an expensive luxury if purchased, while others may also like to make some veritable "pin money" by pointing pins over and above their requirements, for dealers. Older collectors will probably find themselves with so many duties on their hands that, like me, they no longer have the time for pointing their own pins.

The apparatus is not unduly complicated, and in these days of electric tool kits, many will have a power-driven emery wheel (4" diameter by 1" wide is ideal) already in their possession, but, failing this, a treadle-driven wheel can be used. A bridge about 9" wide made of 2"



by 1" batten makes a hand rest, and on this, a plywood platform 6" long by 2" wide (the outside grain, of course, running the 6" way) with a slotted hole at the base end, and the underside of the fore end bevelled to bring it to a fine edge. This is bolted into position with a bolt having a butterfly nut, so that it may easily be adjusted, and the height is

regulated by a wooden wedge under the platform. It is set so that the knife edge is about  $\frac{1}{4}$ " above the top of the wheel.

A pair of good quality wire cutters (I used a skew-cut about 6" long), two boards for holding the cut wires, and a piece of good cork about 2" long by  $\frac{1}{2}$ " by  $\frac{1}{2}$ " complete our requisites. The pin boards should be 6" square and a little over  $\frac{1}{2}$ " thick, and 25 quarter inch holes are bored in lines 1" apart, say 5 each way, and they are then backed by a piece of thin plywood.

Stainless steel wire may be purchased from certain engineering firms specialising in wire drawing, and the sizes for our purposes are .0056" for *Nepticula* up to *Lithocolletis* sizes, .01" for most small micros, .0125", .0152" and .0179", and I might as well remind readers of Mr. Wakely's advice that it is always best to use as large a pin as can safely be used on a micro; this saves broken specimens through bending pins. Half-pound reels of the .0056" size, and one pound drums of the larger sizes, would be supplied by the manufacturers as minimum quantities, and these will supply pins to last a lifetime.

The first thing is to cut the wire into convenient lengths, say 2' 6", and, holding each end with a pair of pliers, hold it taut and run it through a bunsen flame (an ordinary gas stove burner will do) sufficiently slowly for the portion in the flame to become blood red, in order to straighten it. It is then cut up into lengths about  $\frac{1}{8}$ " more than double the length of pin required. Having done this, at any rate in the case of the .0056" size, it is advisable to retemper the wire. This is done by tying the cut wires into a bundle with a piece of .01 wire, and heating the bundle to a blood-red heat, and then plunging it into cold water.

Five is a suitable number of wires to point at one time, and one counts out the wires into fives for each hole in one of the boards, and we are then ready to start pointing. The emery wheel is set in motion, turning away from the operator, and five wires are placed on the platform with about  $\frac{1}{4}$ " of their length over the end of the platform; the cork is placed across them and the board sprung downwards to bring them into contact with the emery wheel. The wires are rolled from side to side with the cork until satisfactory points have been made. The platform is then allowed to resume its normal position, and the wires taken off, reversed, and pointed similarly at the other end. When pointed at both ends they are taken off and placed in a hole in the second board. The process is repeated until the wires in the first board have all been pointed at both ends and transferred to the second board; the wheel is stopped, and the pointed wires are cut in the middle, and the pins are complete. Keeping to bundles of five may seem unnecessarily fussy, but when cut they make ten pins, and counting is thus simplified for packeting, which I have always found most conveniently done in lots of one hundred.

## Current Literature

The Chironomidae are some of the commonest flies and a number of species can be found in the adult state during the winter as well as during the normal collecting season (see *Ent. Rec.*, this volume, pp. 132-133). A recent paper by Dr. Karl Strenzke illustrates 15 of the species of *Chironomus* with remarks on variation, rearing and attempts

to cross some of the species. This paper is in *Arch. f. Hydrobiol.*, vol. 56, pp. 1-42, published in November 1959, and is titled "Revision der Gattung *Chironomus* Meig. I." We can, therefore, hope for a series of papers on this genus. Only the males of this genus can be identified with certainty but both sexes of each species are figured. This is a useful paper on a difficult genus of flies and should be used, with Brundin's paper on the Orthocladiinae (see *Ent. Rec.*, 1956, vol. 68, p. 279), by anyone attempting to identify the non-biting midges from this country.

B. R. L.

## *Apatura iris* Linn. and its Habits in Surrey

By Major A. E. COLLIER

I have read with great interest Mr. Heslop's recent articles in the *Record* on the early stages of this butterfly, and certainly, my limited experience in Surrey confirms his suggestions that local races may have different egg-laying habits.

I found somewhat ambiguous the statement that in nature the female will lay her eggs exclusively on the north-east sector of those willows, only, which are shaded from the south and west. Does Mr. Heslop mean that if the willow is not so shaded the female will lay her eggs in any sector?

In the course of eight years' observation of this butterfly in the Cranleigh area of Surrey I have found that the female lays her eggs almost invariably on the sector or sectors of the tree which can be most conveniently approached, irrespective of the points of the compass.

The majority of the willows which I have searched with success have been on the sides of rides or on the edge of open spaces, and in these cases there is usually one side of the tree which is easy for the butterfly to approach, and from which, when alarmed, it is easy for her to depart.

The eggs and young larvae I have found have always been in these open sectors. In a very few cases I have found larvae on isolated trees, well removed from surrounding forest, and in these cases the larvae were distributed over the sectors from south-west to south-east. A careful check up on the positions of 332 eggs or larvae found since 1952 gave the following results by sectors: N. 32, N.E. 25, E. 69, S.E. 33, S. 68, S.W. 27, W. 59, N.W. 19.

In dense and tall coppice I have found hibernating larvae at the very top of willows projecting above the surrounding trees, where there was no lateral protection and approach was only possible from above.

Mr. Heslop also states that larvae are very much easier to see on the narrow leaved *Salix atrocinerea* than on the broad leaved *S. caprea*. I have found just the opposite, and rarely bother to search narrow leaved trees owing to the excessive time necessary to do the job properly. A quick, almost a cursory glance over the comparatively few leaves of *S. caprea* will reveal eggs, larvae, or signs of eating or resting, inviting a more meticulous search. It is generally assumed that the butterfly prefers the large leaved trees, but I have often wondered whether this assumption does not partly arise from the fact that most collectors prefer to search these easy trees and that *S. atrocinerea* remains in consequence, rather neglected.

In the localities within ten miles of Cranleigh, the concentration of *A. iris* is never very great and I have, therefore, never yet found more than one egg on a leaf, nor more than twelve larvae on one tree, and usually only one to three. Owing to greater mortality in the early stages in captivity, I usually refrain from taking them until the second instar when they settle down readily in a sleeve on a growing willow and appear to be susceptible only to very early and severe air frosts before they have adapted their constitutions to hibernation or to prolonged and great humidity which has occasionally produced a mould or mildew on the hibernating larva.

My only attempts to keep very young larvae in close confinement were disastrous, and ended in death from starvation and exhaustion after endless perambulation.

It is possible, however, to keep them from the egg stage until well into October in the following manner, with very little chance of loss.

The original sprigs of willow on which the egg or larva is found is placed in a small bottle of water, the neck being packed with cotton wool to prevent suicide, and the bottle is placed in a white enamelled pail, with a fine net over the top, which is kept near an east window. Several bottles, each holding several sprigs, can be kept in one pail and the progress of the larvae can be easily observed through black netting. Naturally fresh food must always be available when, or if, the original sprigs dry up, and it remains a mystery to me why some cuttings will stay fresh for months, and even take root in the water, while others wilt and dry up within twenty-four hours. Unnecessary moisture I avoid and consequently have never sprayed eggs, larvae or pupae. Mortality has been very small, certainly not more than 8%, and the resulting imagines have always been full sized and without a cripple among them.

It must be appreciated that my remarks apply particularly to Surrey *iris*, whose habits may have been influenced by increasing urbanisation, and whose existence is certainly threatened by the ever-increasing felling of the oak forests.

Lynher, Horsham Road, Cranleigh.

## Spraying

By CLIFFORD CRAUFURD

The heyday of the lepidopterist is rapidly passing, and for that matter so is that of the collectors and research workers in all insect orders so far as this country is concerned. The interests of the botanist are also greatly threatened.

Almost simultaneously with the advent of the mercury vapour light from which we have learnt so much regarding the distribution of insects, there have arrived the sprayers of poisons.

Insecticides and weedkillers are sold to farmers, market gardeners, to town, borough and county councils, and are often used without any scientific knowledge of their effects and without the knowledge that in the case of insecticides our friends as well as our enemies are killed.

In addition to weedkillers many farmers instead of ploughing in the stubble after harvest burn the surface of the whole field, thereby killing many plants, and a large number of insects in the egg, larva, pupa and imago stages. Farmers are also increasing the size of the fields, as this

makes it easier to use combines and other machinery, the hedges and ditches being levelled with the field. Warblers and other small insect-eating birds do not penetrate far into the huge fields as there is no shelter for them when the hawks and other raptorial birds appear; there is also no hedge or ditch adjacent to the field in which to nest.

Some farmers, instead of hedging and ditching, burn the hedges and the low growth in the ditches. It is presumed that this is to save the cost of labour as the farm worker is now paid what is considered to be a high wage and the farmers consider they cannot afford to put a man to hedging and ditching.

A number of our main roads have wide verges and the county councils have planted flowering trees on the verges. I passed one Sunday along such a road in a car in the late spring with a friend, and the road sides were beautiful with a very large number of flowering weeds in addition to the trees in bloom. On the following Sunday afternoon I saw the weeds had all been cut down. In the eyes of the county surveyors, every indigenous English plant is a weed, so they employ men to scythe the weeds lest the seeds of these pernicious weeds should be blown by the wind on to the adjacent farm lands. Fifty years ago I never heard a farmer complain about the seeding of plants from the verges. A farmer who is worth his salt keeps his land clean without the unskilled aid of the County Surveyor. Some councils, instead of cutting down the flowering weeds, kill them with sprays.

In Hertfordshire and Essex, two large agricultural counties with very small areas of uncultivated land, there will soon be very little of interest to the botanist, the entomologist, and indirectly the ornithologist if the present poisonous spraying is continued and increased.

I give below some families and sub-families of butterflies and moths and the type of plant on which the larvae feed. The details are taken from Allan's *Larval Foodplants*.

Satyridae	meadow grasses
Nymphalidae	violets, cow wheat, plantains, devils-bit, nettles, thistles, elm, willow and honeysuckle
Nemeobiidae	primrose, cowslip
Lycaenidae	violets, clovers, docks
Pieridae	cabbage, charlock, clovers, vetches, and buckthorn
Hesperiidae	trefoils, grasses
Sphingidae	potato, bindweed, bedstraws, trees
Notodontidae	trees
Thyrididae	trees
Lymantridae	trees
Lasiocampidae	grasses, trees
Drepanidae	trees
Arctiidae	trees, clovers, low plants, algae, lichens
Hypsinae	low plants
Agrotiinae	low plants
Hadeninae	trees, low plants
Cuculiinae	trees, low plants
Acronyctinae	trees, low plants
Amphipyridae	trees, low plants
Eustrotiinae	low plants

Westermanniinae	trees
Catocalinae	trees and clovers
Pantheinae	trees
Plusiinae	nettles, sedges
Ophicerinae	trees, grasses, sedges
Hypeninae	nettles, trees
Geometrinae	trees, low plants
Sterrhinae	chiefly low plants
Larentiinae	grasses, vetches, bedstraws, champions, low plants, trees
Boarmiinae	chiefly trees; some on clovers and low plants

The insects feeding on trees should at present escape extinction. I cannot speak for the microlepidoptera, but they will of course be equally affected. The larvae of some of them feed on umbellifers on roadside verges as also do some of the "pugs".

In the *Farmers' and Students' Handbook* there is a list of 52 weeds of arable land to be killed by selective weedkillers. There is also a list of 28 weeds in grassland to be dealt with and two weedkillers are given. Do not forget that other weeds are killed as well as those mentioned.

I give below some of the weeds named and the number of macrolepidoptera whose larvae feed on them:

Bindweed 11, burdock 5, buttercup 6, champions 28, coltsfoot 3, couch-grass 22, dock 69, fat-hen (goosefoot) 10, field mint 2, forget-me-not 1, flixweed 7, groundsel and ragwort 29, hair grass 17, hemp-nettle 2, knotgrass 32, nettle 18, oatgrass 6, orache 8, persicaria 34, speedwell 4, thistle 6, treache mustard 1, viper's bugloss 2. There are also to be considered a number of polyphagous larvae and about 20 species whose foodplant in this country is unknown.

Another loss to the countryside is the building of new towns and the spread of the old ones, largely at the expense of arable land. Many thousand acres have already been lost to the countryside.

Happily the number of nature reserves is slowly growing, and these may yet prove to be the last stronghold of our native flora and fauna.

*Homo sapiens*—the only stupid animal on the face of the earth—has in the past three hundred years disturbed the balance of nature, and has denuded, eroded and burned vast areas of the earth, and has caused to become extinct large numbers of animals, birds and plants. It seems to me that he will now add the poisoning of plants and insects and indirectly of birds and animals to his other stupidities.

Denny, Galloway Road, Bishop's Stortford, Herts. 14.vi.1960.

## *Gonepteryx rhamni* Linn. Migrating

By H. C. HUGGINS, F.R.E.S.

Mr. Chalmers-Hunt's note on this subject (*Ent. Rec.*, 72: 72) reminds me that I have several times in my youth seen this butterfly crossing the Higham marshes. Curiously enough, all the wandering *rhamni* I have seen there were males, mostly in August, but it is possible that the reason was due to the fact that I so often went there in my August holidays. I used to walk down the canal bank from Graves-



end, perhaps cross the bridge by the Uralite works and have a look at the locality where *extimalis* recently turned up, and then recross and follow the bank till near the railway bridge there was a cart track into the marshes, on each side of which grew gnarled old hawthorns and a few blackthorns. This track was full of *Maniola tithonus* Linn. and *Euzophera marmorea* Haw. occurred amongst the blackthorns. At the end of the Avenue, as it was called locally, was a path to the river-wall between Shorne Mead and Cliffe batteries, and in the course of the years I must have seen half a dozen *rhamni* crossing the marsh. The river-wall then contained large numbers of *tithonus* and a few *Eumenis semele* Linn., but what I used to look for on it in August was *Colias croceus* Fourc., as this was always the first place at which that insect appeared and was an indication of when to visit the lucerne fields.

*Rhamni* appears in the road opposite this house in the spring every year, and usually in the autumn; the nearest buckthorn is two miles away. Both sexes turn up, but males preponderate. As I have already recorded (*Entomologist*, 90: 141) I netted a male *rhamni* on 29th May 1956 in the Burren at least eight or ten miles from the nearest buckthorn, I should put the probable distance at 14. This specimen settled on a flower, but usually these wandering *rhamni* seem to be flying straight and purposefully, probably (like some human beings) being in a hurry to get somewhere to do nothing.

## An Entomologist's Wife

By Mrs. E. E. HARPER

This summer, my husband broadcast a short talk about his hobby of collecting moths, on "Woman's Hour". I wonder if I could give you the woman's point of view on this interesting activity?

I am the wife of a retired Commander, R.N., and the mother of a medical student son; both are rabid entomologists, and I don't know which is the worse.

My life has fascination, many complications, and not a few snags. To dewy-eyed young women about to marry, or toying with the idea of marrying an entomologist, I would not exactly give the advice "not at any price", but I do urge a little caution.

Entomology is a hobby which is all-absorbing. In some men I have seen it assume proportions almost amounting to mania as the men grow older and become more and more interested and involved.

The men with this hobby, or sometimes profession, represent a cross-section of society. Few women take it up on their own, perhaps because as a sex we intuitively foresee the snags involved. As for the men, I have known all the well-known professions involved. Admirals and Air Marshals, Parsons and Politicians, even an occasional Prime Minister, Doctors Publicans and, paradoxically, Policemen too. Perhaps entomological Policemen are a little less tempted to break the law than the others. Men in settled jobs bordering on boredom are also intrigued. The Civil Service, Bankers, and those men vaguely known as "Something in the city", men drawn from all walks of life, some with titles and all kinds of decorations, all may be bitten by the bug of "bug-hunting" and join a closely-knit fraternity.

I think their wives fall into three categories. First, the very disapproving. These wives are mainly elderly; they have tried, but have had too much of it. Secondly, the very young women. These start married life in a flush of enthusiasm for their husband's hobby, and soon they find themselves involved in a morass of entomological apparatus, feeding larvae, hatching ova, breeding cages, tins and all the associated activities. Thirdly, the nit-wits. I myself fall into this category with the women who try to keep domestic order, their men-folk fed, and who know the commoner kinds of moth but are not expert in any way at all. We can, if the know-how is carefully explained to us, sometimes find procryptic moths on tree trunks, caterpillars and chrysalids here and there; often indeed we spend our outings in this way. I think my category dislike the more austere forms and manifestations of the fever, such as collecting in the pouring rain, in a marsh, or hanging by one's eyebrows over the top of a high cliff at night in a howling gale. I have known entomological wives do all this and more without a qualm, and never lose their glamour or their hair-set. To these women I pay due homage; they should have some kind of memorial.

If you do become an entomologist's wife, gone are your hopes of married and domestic security. Rather like a doctor's wife, you will be on call at all hours by your man and his entomological friends. In the spring and the autumn, as well as the summer, there is dusking and sugaring. For the benefit of the uninitiated, this means painting a patch on fence posts, tree trunks, or foliage with a sticky mixture of black treacle, beer and assorted flavourings such as rum or amylacetate. This is varied by your husband returning to see if the moths like the mixture at all hours of the night.

It may also mean complaints from the neighbours, and dealing with these, too, is also strictly an entomologist's wife's province, privilege, or however you view the matter!

Now, the question of cooking for a husband who is an entomologist. If you are a 'Cordon bleu' expert, or even just a very good cook, say good-bye for ever to such dishes as omelettes, hot soufflés, and the like. When your omelette or soufflé is looking mouth-watering and lovely, and should be eaten instantly, your husband will only say with maddening calm that he can't possibly eat it yet! He has fifty young caterpillars to feed, and that will take another 20 minutes at least. "Run away and don't bother me, there's a good girl", he will say cheerfully and thereafter (temporarily) forget your existence. So confine your cooking to meals that will not spoil if kept hot for an indefinite period.

Gone, too, are your hopes of a settled annual holiday. You will mention timidly to your husband how much you would like a fortnight of shopping, or even shop-gazing, a few new clothes and gaiety in some fashionable sea-side resort. If you have married an entomologist, he will say: "Nonsense! my dear girl, such and such a moth emerges in the wilds of Norfolk . . . Scotland . . . or Ireland, and I particularly want you to come with me and hold the lamp, or feed the caterpillars, or some other strictly entomological job". He will add absently, "Don't bring too many clothes, will you? because I shall have to bring so much gear myself!" This latter statement is only too true, and eventually we set off with an unlimited number of tins, jars, nests of glass-topped boxes, paraffin lamps, methylated spirit, treacle. Cater-

pillars which have to be fed must of course come too, and add to these eggs about to emerge into tiny caterpillars, chrysalids about to emerge into moths, and maybe a temperamental female moth which your husband wishes to lay eggs for him, and which must be coaxed into ovi-positing with a mixture of sherry and treacle! All this is no exaggeration and strictly truthful. Nowadays the inevitable mercury vapour outfit comes too. This last item is a decided snag to an entomologist's wife. Mercury vapour lamps give forth a rather ghastly blue light, and are a great attraction for moths. Clever entomologists have adapted these electrically so that they can run them off car batteries, from the household supply, from fearsome (so called) portable engines which can be carried up mountains, on to bogs, the cliffs, the sea shore, or where ever the moths occur. The entomologists themselves are so used to the mercury vapour outfit by now that they take it for granted as an absolute necessity.

BUT. The neighbours, the Police, the Customs, the Coastguards and the gamekeepers are not always so well informed. They see a strange and rather horrible bright blue light at night and immediately assume that anyone out at that hour must be poaching, smuggling, burgling, or engaging in some other nefarious activity.

Many times, as an entomologist's wife, have I soothed down officialdom, alarmed householders, and the like. One and all, they find it difficult to believe that anyone out late at night can be up to any good. They are also difficult to persuade that anyone who is engaged in really criminal activities would never advertise their presence with a noisy engine and a bright blue light.

Still, all this is just part of an entomologist's wife's duty, and with me now, it is all routine. Many famous stories have been told of well-known entomologists, in the two world wars, being arrested as beautiful blonde spies. This I can understand perfectly. To entomologists, war is an incident, a nuisance, but not to be taken seriously at any cost. They are quite unaware of anything except the moth, the caterpillar, which they must obtain in some particular place, at the precise time of year when it occurs. They are oblivious of wars, and similar complications. My husband, in the last war, often spent his spare moments ashore at his favourite hobby. In uniform or in plain clothes he was often suspected, and sometimes this could become alarming, or annoying.

To go from the wartime experiences to peacetime. One of the best-known entomologists of my acquaintance was once a policeman. On his beat one night he saw the extraordinary phenomenon of a parson who had climbed up a lamp-post. To his query "what's going on here?", the parson, being an entomologist, was not one whit abashed. He simply slid down the lamp-post and explained to the policeman how moths are attracted by light, so that in the end the policeman became so intrigued that he became a famous collector.

I hope that I have made you see, as future entomologist's wives, something of the fascination as well as the complications of this way of life.

For myself, undoubtedly, I get irritated to the point of exasperation, but not for anything would I miss meeting these famous and learned men, and their usually stoical and sometimes learned wives. I too am always learning and, speaking purely in the third category of the nit-wit, I might some day do or learn something useful. Who knows? At least one never leads a dull life.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

*EVETRIA POSTICANA* ZETT. AND *E. TURIONANA* HÜBN. These two insects, although undoubtedly distinct species seem to me to be much more nearly related to each other than to any others of the genus, although I notice that Mr. Heslop in his check-list places *E. resinella* Linn. between them. Apart from their somewhat similar appearance, they feed in the same manner, entirely clearing out the inside of the central bud of a shoot of Scotch fir and leaving practically no sign of their presence within until the death of the bud becomes apparent. Occasionally a little resin may be seen about the bud, but that is all. *E. buoliana* Schiff. and *E. pinicolana* Doubl. feed on the growing shoot which they distort and make in a great mess with flowing resin, whilst *E. pinivorana* Zell. feeds in the same way but owing to its smaller size makes less trouble. *E. purdeyi* Durrt. feeds on the blooms and *E. resinella* makes its characteristic cells on the shoots, in which it enjoys a two-year cycle. The other Scotch fir insect, *E. logiana* Durrt. feeds in the same way as *pinivorana*, as does *E. sylvestrana* Curt., which, however, prefers stone pine.

The pupae of *turionana* and *posticana* are to be found head downwards in the hollow buds, *turionana* in the leading bud of the main shoot, and *posticana* in that of a side shoot. In most cases, however, the bud contains the cocoon of a solitary ichneumon, in fact, the percentage of *turionana* so killed is so high that I have often wondered how the moth carries on. I set a good many of the parasite of each species, which appeared to be the same insect, and sent them to the late B. S. Harwood who confirmed that those I sent him were conspecific, but I have, unfortunately, lost their name.

Both insects fly at early dusk round young fir trees, *turionana* in late and *posticana* in very early May, but I have usually found it easier to tap the boughs lightly in the late afternoon, when the moths flutter gently to the ground.

*Turionana* has a considerable range of variation. It was not uncommon in the newly planted areas of Blean in 1924-1930, and amongst others I captured one entirely cream in colour except for the costa which was grey, and the copper tips of the wings and another unicolorous dark greyish-brown except for the copper tips. Both insects were newly emerged.

When I first found *posticana* at Hartlip near Sittingbourne in Kent in 1922 it was not known to occur in the county, yet I afterwards found it very much more widely distributed than *turionana*, in fact, I think it occurred in every young plantation I visited.

*HETEROGRAPHIS OBLITELLA* ZELL. On 5th June I took a female *oblitella* in my moth trap; it is a moderately dark one of the grey form, and in good, though not fresh condition. It was accompanied by a number of *gamma* and *noctuella*, and was, I fancy, an immigrant. The date at which I took it seems to be between the broods; when the moth made a temporary settlement here in 1956 the broods were at the beginning of May, July and September, whereas on the continent the second could well be out by the beginning of June. I have been told that other specimens have been taken here this year in the late spring;

these would be at the date I would expect a native brood to emerge after the mild winter.

I can add another to last year's autumn captures; Mr. A. J. Dewick recently asked me to check the identity of a specimen he had then taken at Bradwell-on-Sea.

*HOMOEOSOMA CRETACELLA* ROSSL. (*SENECIONIS* VAUGHAN). The hot weather last year seems to have caused the dispersal of a good many insects to new localities. *Cretacella* has long been known from here; Vaughan's specimen from which he described it as *senecionis* being taken at Leigh on Sea, but it only occurs, in my experience, on the river-wall and its environment between Leigh-on-Sea and Benfleet, and around Barling and Wakering. However, on 20th May I took one in my garden moth trap, another on the 21st, two on 5th June and a fifth on 6th June, so it seems obvious that a brood was hatched in a weedy orchard containing plenty of ragwort at the bottom of my garden. At the same time Mr. A. J. Dewick took one or two at Bradwell-on-Sea; it was a new insect to him. I have run my moth trap in the garden since 1953 and these are the first *cretacella* to visit it.

## Notes and Observations

*PYRAUSTA PERLUCIDALIS* HÜBN. (LEP. : PYRALIDIDAE) IN KENT.—I wish to put on record the fact that in July 1960 I had the good fortune to find *perlucidalis* in Kent. The locality where it occurs is very restricted and during the next few months it is hoped to discover something of its life history here, and later to issue a more detailed account. The species was unrecorded from Britain prior to 1957 (cf. Mere and Bradley, *Ent. Gaz.*, 8 (3): 162-166), and previous to its discovery in Kent was only known to occur in Huntingdonshire.—J. M. CHALMERS-HUNT, 1 The Hard Courts, The Grove, West Wickham, Kent.

*UTETHEISA PULCHELLA* LINN. AT DUNGENESS.—Prior to working mercury vapour light at Dungeness on 15th May, I worked some of the rough ground and put up a female *Utethesia pulchella* Linn. at about 6.45 p.m. B.S.T. The insect was kept for ova, but the few ultimately laid proved infertile. There was little of interest at the light except one fresh *Calophasia lunula*.—ALAN KENNARD, Officers Mess, RAGW Range, Benbecula, Hebrides. 20.vi.60.

*MYELOIS CERATONIAE* ZELL. IN IMPORTED NUTS.—Last Christmas, my daughter found a 'wiggler' in a walnut. It was cherished in a glass-topped tin together with the remains of the nut but was never seen again. On 30th May a female *Myelois ceratoniae* Zell. emerged. According to our greengrocer, the nuts originated from Sorento but I do not know where they were stored.—Lt. Col. W. A. C. CARTER, Briarfields, Sandels Way, Beaconsfield, Bucks. 18.vi.1960.

[*M. ceratoniae* cannot be regarded as a warehouse pest; nuts and locust beans, etc., from which this insect has emerged in warehouses, were infested by it in the field. I do not think that there is any authenticated case of goods lying in store being infested there by an egg-laying female *ceratoniae*.—ED.]

A NOTE ON *HEMARIS TITYUS* LINN.—It is widely believed that the two bee hawks (*Hemaris tityus* L. and *H. fuciformis* L.) fly only in bright sunshine, and South says “the best time to see it” (*H. fuciformis*, and no doubt the same applies to *tityus*) “is on a nice sunny morning between ten o'clock and midday”. But any entomologist who may find that the sun goes in just as he has arrived at his collecting ground can draw comfort from the following observations. On 27th May I went with Brigadier Warry to a locality for *tityus* in the New Forest. We arrived there at 11.25 a.m. B.S.T.; the weather was dull but warm. At 11.30 I took a *tityus* at bird's foot trefoil (*Lotus corniculatus*). Within the next two hours we took eight more. My second capture was visiting the flowers of tuberous bitter vetch (*Lathyrus (Orobis) montanus*). Three or four were taken at lousewort (*Pedicularis sylvatica*), a favourite attraction. Owing presumably to the dull weather, all these moths were much more docile and easy to catch than those which I had seen many years ago in brilliant sunshine on the turf moor near Glastonbury. I watched a female lay a green egg on a blade of grass beside a plant of devil's bit Scabious (*Scabiosa succisa*) and then move along to lay another on the underside of a scabious leaf. *Tityus* was still flying within a few minutes of our leaving the ground at 1.45.—H. SYMES, 52 Lowther Road, Bournemouth. 30.v.60.

*NYMPHALIS POLYCHLOROS* LINN. IN WEST SUSSEX.—On 24th June 1960 I captured a freshly emerged male *Nymphalis polychloros* Linn. which had flown into my garage from the garden. There is a possibility that larvae had been feeding on a tall pear tree in an adjoining overgrown garden, as the terminal leaves of several upper branches of this tree had been eaten to the midribs. This was verified by cutting off three twigs. Examination with a lens showed that larvae must have been feeding two or three weeks previously, but the undergrowth of brambles was too dense to favour a search for pupae. Last year, at the end of June, my wife told me she had seen a *N. polychloros* in the garden, but I am afraid I was a trifle sceptical, and suggested that the insect may have been a large *Polygonia c-album* Linn. which appears regularly. Now there is a definite “I told you so” atmosphere!

The possibility of *N. polychloros* being established in West Sussex is interesting as I know of no recent records for this part of the country.—F. V. L. JARVIS, 33 Greencourt Drive, Bognor Regis, Sussex. 26.vi.1960.

*MARGARONIA UNIONALIS* IN WEST SUSSEX.—On 26th October last, my wife found a fresh female *Margaronia unionalis* on a *Forsythia* bush in the garden here.—F. V. L. JARVIS, 33 Greencourt Drive, Bognor Regis, Sussex.

*MACROGLOSSA STELLATARUM* LINN. IN SOMERSET.—I would like to record having seen a male *Macroglossa stellatarum* Linn. to-day on a hillside near Glastonbury, Somerset.—N. A. WATKINS, M.A., F.R.E.S., 9 Druid Road, Stoke Bishop, Bristol 9. 26.vi.1960.

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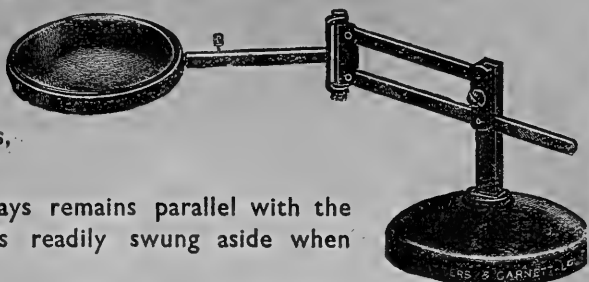
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## Breeding *Polyommatus icarus* Rott.

By Lt. Col. W. A. C. CARTER, R.A.

I try to breed *icarus* every year. In 1959 I had some quite unexpected but very interesting results. Because they were so unexpected, the results have, unfortunately, lost some of their value.

According to Tutt (1), ab. *melanotoxa* was described by Pincitore-Marott in 1873 and is the same as ab. *arcuata* Weym (1878). "The insect is called *melanotoxa* on account of the black bow which stands on the underside of the forewings in the middle of the inner margin. It is much scarcer in our district (presumably Palermo) than *icarus* and flies in the months of April, May and, often, June". Tutt says that the aberration appears to be generally distributed although usually not common, and that it occurs in both sexes. Verity (2) thought that Marott considered it to be a form occurring only in the female; Tutt says that there appears to be no foundation for this and quotes Wheeler (3) as expressly stating the contrary. Conversely, Blachier considered that, around Geneva, the form is more frequent in the female than in the male. In 1903, Courvoisier described ab. *semi-arcuata* as an intermediate stage in which confluence is not complete and said that the form predominates in the female.

Ab. *basijuncta* was described by Tutt in 1910 (4): "The penultimate spot of the sub-median series of the hindwings united to penultimate basal spot, thus forming a short line parallel to the inner margin". Tutt suspected that it was a rare form, himself having only one example, a male.

Tutt (5) gives the name *sub-obsolata* to the form in which "some of the ocellated spots in the sub-median (and basal) row [are] absent on the forewings or hindwings or both fore- and hindwings". Tutt adds that this name should be applied to Courvoisier's group of aberrations which "comprise all those examples which have any number of spots in the sub-median series between the full, normal number and the absolutely obsolete form". Tutt considered specimens without the 6th and 7th sub-median spots to be rather common and added that the "double ocellated spot near the anal angle of the forewings is absent in several specimens of *candiope* and *icarinus*" in his own collection. (Note: These are the forms in which, respectively, one and both basal spots are missing from the forewings).

In my experience, the form without spots at the anal angle is fairly frequent and occurs much more often in the male than in the female. The form is also reasonably constant and does not appear to be associated with abs. *candiope* and *icarinus*. Out of 130 males, I have 15 in which the double anal spot is completely missing and 7 in which it is reduced to a single spot. There can be little doubt that this is a form of ab. *obsolata* but, for the sake of convenience, I propose to refer to it as ab. *absens* to denote the complete absence of the spots in the anal angle of the forewings.

Last year, I failed to find any aberrant females in the nearby colonies. So I selected two fresh but typical insects and, on 29th May, caged them both in a single 9" flower-pot (6) with sprigs of *Lotus*. The weather was warm and sunny. During the next two days, a large number of eggs was laid and, on the evening of 31st May, 62 were

removed and put into a 2" plastic box. On 4th June a further 94 eggs were collected and the insects were released.

The eggs began to hatch on 8th June. By 21st June there were 120 larvae and, already, some were noticeably larger than others. The larvae were kept in 3" glass-topped tins. By 4th July, many of the larvae were showing unmistakable signs of pupating and, a week later, several pupae were removed. There had been one or two deaths but the majority of the remaining larvae looked healthy; they were, however, small in size and seemed to be growing very slowly.

On 17th July, the first male emerged—a good ab. *melanotoxa*. Four days later thirteen emerged, including a large number of ab. *melanotoxa*, especially among the females.

Meanwhile, three more larvae had pupated but all the rest were showing signs suspiciously suggestive of diapause. By the end of July the larvae were still feeding, but only very slowly. Some of them were still very tiny and seemed to spend most of their time glued to a leaf. On 9th August, there was one more pupa and one fully-grown larva. The last insect to emerge from this brood did so on 6th September—a male which was badly crumpled. The emergence was, therefore, spread over a period of seven weeks and produced 26 males and 29 females. On 22nd August there remained 35 larvae. They were still very small and suddenly became smitten with some kind of disease which made them turn a bright rust-red in colour and, as they were obviously not doing well, they were turned loose.

The brood was a mixed one, originating from two females which were, apparently, quite typical. The results may be summarised as follows:—

TABLE 1.

*Brood 59/9—two wild females, apparently typical*

	Male	Female	Total
1. typical .....	16	2	18
2. melanotoxa .....	2	11	13
3. semi-arcuata .....	6	14	20
4. melanotoxa-basijuncta .....	—	2	2
5. semi-arcuata-basijuncta .....	1	—	1
6. absens .....	1	—	1
Total .....	26	29	55

The first emergences from this brood were encouraging, so, on 19th July, a pair was selected for an F2 brood and was caged as before. Neither insect showed any obviously abnormal characters. The weather was still hot and sunny and, by 4.30 p.m., they were seen to be paired. Four days later, the male had unaccountably disappeared. By 26th July, 172 eggs had been laid, so the female was released. The eggs started to hatch on 30th July and, by 9th August, there were 115 larvae—some already larger than their fellows. By 28th August there were 25 pupae, and 68 larvae were still feeding; one of the pupae was showing signs of colouring up.

Unhappily, I had to be away from home for a few days just prior to this. I thought that I had left the larvae with an adequate supply

of food, but the few larger ones had eaten all that was going and had started on each other. At least five freshly-formed pupae had been attacked. This is the first time that I have experienced cannibalism with this species, and it lends weight to the theory that, apart from known outcasts such as *Cosmia trapezina* L., larvae are not normally cannibals but will attack each other if deprived of their proper food.

On 5th September the first male emerged—apparently quite typical. There were many larvae still feeding but they were very lethargic and were showing unmistakable signs of diapause. On 20th September, in an attempt to prolong the hours of 'daylight', the larvae were illuminated by a 60 watt pearl lamp, placed about 12" away from the cages from 6.30 p.m. to 10.30 p.m. daily. By the end of the week there were no very obvious results. The larvae were still eating a little and were moulting, but they were growing very slowly and were probably too far towards diapause for the extra light to make much difference. By 10th October, the larvae were becoming an easy prey to mildew and all but a few of the largest were turned loose. On 20th November, a female emerged but was unable to free itself from the pupal skin. It was hopelessly crippled and it was impossible to make out the wing-pattern. Eclosion seemed to take a very long time—perhaps due to the unseasonable emergence and the low temperature. The pupa showed signs of colouring up at least three weeks before eclosion. A week later another female emerged, but it, too, was a failure.

In all, this brood produced 14 males and 12 females; two of the latter were failures. The result of the brood was as follows:—

TABLE 2.

*Brood 59/13—parents ex 59/9, apparently typical*

	<i>Male</i>	<i>Female</i>	<i>Total</i>
1. typical .....	8	—	8
2. melanotoxa .....	—	1	1
3. semi-arcuata .....	3	7	10
4. melanotoxa-basijuncta .....	—	2	2
5. basijuncta .....	—	—	—
6. absens .....	3	—	3
Total .....	14	10	24

On 19th July, a strongly-marked female *melanotoxa-basijuncta* emerged from Brood 59/9. She was caged with an apparently normal male. No pairing was seen but, on 25th July, 142 eggs were collected and the parents were released.

By 9th August there were 80 very small larvae which showed a marked disinclination to start feeding. Despite the continuous hot, dry weather, mould was rather troublesome. Twenty-one pupae were removed on 28th August. Fifty-three larvae remained, feeding slowly but fairly steadily. On 26th September these larvae, too, were given light at night but with the same lack of success. By 10th October, there were four more pupae but they came to nothing.

Twenty-two butterflies were obtained from this brood. Results were as follows:—

TABLE 3.

*Brood 59/14—parents ex 59/9, M typical; F melanotoxa-basijuncta*

	Male	Female	Total
1. typical .....	4	—	4
2. melanotoxa .....	—	10	10
3. semi-arcuata .....	2	1	3
4. melanotoxa-basijuncta .....	—	1	1
5. basijuncta .....	—	—	—
6. absens .....	4	—	4
Total .....	10	12	22

It is most unfortunate that Brood 59/9 was mixed; the results are almost impossible to analyse and cannot be regarded as anything more than suggestive. There is, however, one very striking fact. If all three broods are considered together, the total number of insects was 101, equally divided between males and females. Twenty-seven females were *melanotoxa* but this form appeared in only two males. Conversely, thirty-six males, but only two females, were normal. This is well brought out in the following summary:—

TABLE 4.

Brood	Total		normal		semi-arcuata		melanotoxa	
	M	F	M	F	M	F	M	F
59/9	26	29 (55)	17	2 (19)	7	14 (21)	2	13 (15)
59/13	14	10 (24)	11	— (11)	3	7 (10)	—	3 (3)
59/14	10	12 (22)	8	— (8)	2	1 (3)	—	11 (11)
Total	50	51	36	2	12	22	2	27

*Semi-arcuata* is very difficult to define but, for the purposes of this discussion, insects have been scored as *semi-arcuata* if the 'bow' is made up of three or more separate spots or if the usual two spots show an obvious tendency to coalesce. Insects with two distinct spots have been scored as 'normal' as far as the *melanotoxa* character is concerned; they are not necessarily typical and, as will be seen by referring to the tables, may include other characters such as *basijuncta*. Insects which show no obvious abnormalities on the undersides have been classed as typical. The total number of *semi-arcuata* was, thus, 34 in the ratio of two males to one female. In fact, the difference from equality in the observed figures for *semi-arcuata* is significant at only slightly below the 10% level (for one degree of freedom,  $\chi^2=2.94$ ). It may, therefore, be justifiable to assume that this character may appear with equal frequency in either the male or the female.

These results tend to confirm Marott's suggestion that the *melanotoxa* character is largely confined to the female. Dyson (7) obtained similar results. In 1951, he bred 19 males and 18 females from a wild *melanotoxa* female and obtained 11 *melanotoxa* of which only one was a male.

TABLE 5.

*Dyson, 1951—ex wild F. melanotoxa*

Total		normal		semi-arcuata		melanotoxa	
M	F	M	F	M	F	M	F
19	18	15	6	3	2	1	10



It is evident that *semi-arcuata* can occur with equal frequency in both sexes, but that *melanotoxa* occurs only rarely in the male. When it does occur, the character is weak and ill-defined compared with the bold bow-shaped mark of the female. Since there is no evidence of an excess of females, it is unlikely that homozygous *melanotoxa* is lethal in the male. It follows that the gene must be suppressed or manifested in some other form in the male. It is tempting to assume that *semi-arcuata* is the intermediate form between the normal and the full *melanotoxa* but Ford (8) considers this an uncommon condition. Dominance seems to be ruled out by the constant recurrence of all three classes—normal, *semi-arcuata* and *melanotoxa*.

It is possible, therefore, that this is an example of multiple allelomorphism; due to the difficulty of distinguishing *semi-arcuata* with any certainty, it is probable that normal *icarus* have been confused with heterozygotes and vice-versa. In Brood 59/14, if normals and *semi-arcuata* are counted together, the results are exactly those to be expected from a back-cross between a heterozygote and homozygote *melanotoxa*.

I have a strong feeling that *absens* is, in some way, associated with *melanotoxa*. The form does not appear in the female but it seems to turn up amongst the males with a frequency too great to be due to pure chance. As a hypothesis, if *absens* is counted as an expression of *melanotoxa*, Table 4 is modified as follows:—

TABLE 6.

Brood	Total		normal		<i>semi-arcuata</i>		<i>melanotoxa</i>	
	M	F	M	F	M	F	M	F
59/9	26	29 (55)	16	2 (18)	7	14 (21)	3	13 (16)
59/13	14	10 (24)	8	— ( 8)	3	7 (10)	3	3 ( 6)
59/14	10	12 (22)	4	— ( 4)	2	1 ( 3)	4	11 (15)

This is even more difficult to interpret and also casts some doubt upon the suggestion that Brood 59/14 is the result of a back-cross. Though, in fact, the figures 7 and 15 differ hardly significantly from equality ( $\chi^2=2.9$ ).

A summary of the *basijuncta* results is given below:—

TABLE 7.

Summary—ab. *basijuncta*

Brood	Total	Normal	<i>basijuncta</i>
59/9	55	52	3
59/13	24	22	2
59/14	22	21	1
Total	101	95	6

This suggests that ab. *basijuncta* is certainly not a simple recessive. It is significant that only one example occurred in Brood 59/14 amongst the offspring of a well-marked *basijuncta* female.

I can go no further than this, and I hope that someone with more knowledge and experience than I will be able to produce a convincing explanation of these results. At least the figures show that there is still plenty of work to be done; when we've cleared up *melanotoxa* and *basijuncta*, then we can start on *costajuncta*!

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## A Norwegian Trip in Search of Microlepidoptera

By S. N. A. JACOBS

It had been my intention this year to attend the World Entomological Congress at Vienna, but as the year went on it became apparent that I would have to make a business tour to Hamburg, Copenhagen, Oslo and Bergen, so I decided that I would incorporate our holiday with this tour.

My wife and I set out early on 6th July for Manston, whence we flew with the car to Ostende. We took off at about 11 a.m. and by 11.45 we were driving hard across Belgium along the Brussels motor road. We left this road just before Ghent taking the road for Antwerp, passing through the Scheldt tunnel, and so more or less bypassing the town, and on through Hertogenbosch, Arnhem and Nijmegen to Hengelo, just before the German frontier, and here we spent the night in a very pleasant hotel in quiet residential streets, which is mainly used by engineers visiting this active and pleasant manufacturing town.

Early the following morning we set out on the road for Bremen, much of our road lying through seductive woodland and less heavily wooded sandy heathland which made a strong call to the entomologist in me; however, our hotel accommodation was booked for us in Copenhagen, Oslo and Bergen for the business trip and we had to press on to keep up with the schedule. At Bremen we got on to the autobahn for Hamburg where we paid our first business call. Finding the required address was somewhat difficult owing to a combination of many one-way streets and my somewhat shaky schoolboy German, both of which helped to hamper our progress. However, our call made, we eventually found our way on to the autobahn for Lubeck and pressed on to Grossenbrode where, after an evening meal, we boarded the ferry for Gedser in Denmark, and arrived there just before midnight of 7th July. Though our Copenhagen accommodation was booked for that date, we decided that it would be foolish to drive through the night, and after despatching a telegram to the hotel from the ferry, we spent the night at the motel at Gedser, departing early the following morning for Copenhagen, arriving there shortly after 11 a.m. A quick change into business clothes and the round of visits commenced. This side of our visit was finished by mid-day on Saturday, 9th July, and we stayed over the week-end before setting out for Oslo.

We then had the pleasure of meeting our old friend Carolsfeld-Krausé, his wife, and their sprightly eleven-year-old daughter. I had corresponded with "C-K" for many years before the war on the sub-

ject of *Nepticula* mainly, but this was my first meeting with him in the flesh, and Mrs. Carolsfeld-Krausé had prepared a royal welcome for us in their little modern house in the Vanlose district. Strange to say, we each found the other exactly as we had been led to imagine the other to be by our correspondence and were soon deep in discussion on *Nep.* mines and genitalia dissections, to such a degree that our respective wives were compelled to drag us to the dinner table almost by physical force.

In the afternoon we all set out on a sight-seeing expedition to Roskilde where, in the cathedral, lie all the Danish kings dating back to the very early years, and our host, being a schoolmaster, was able to give us a most interesting outline of Danish history.

On Sunday morning we again visited C-K and walked over one of his near-home collecting grounds along a moat-like waterway to some semi-bog scrubland, but insects other than *Hyponomeuta euonymella* L., which had done their best to defoliate the *Pyrus acuparia* trees, were scarce; one or two *Pieris napi* L. and *Aphantopus hyperantus* L. were about all we saw. After lunch, we made our way northward in the car to Hillerød, and visited the famous Frederiksborg Palace, formerly a royal residence, but now housing an exceedingly fine collection of portraits and pictures illustrative of Danish history, together with furniture, plate, and other household effects of historic interest. Again our conductor gave us a most interesting account of what we saw.

Sunday evening saw us gathered at dinner on the seventeenth floor of the Europa Hotel, overlooking the greater part of Copenhagen. Our adieux having been taken on driving our guests home, we set out on the road again early on Monday, 11th July, for Oslo, making our way along the east coast of Zealand to Elsinore, and crossing to Helsingor, Sweden, by ferry. Here, we reverted to driving on the left hand side, setting out along the Stockholm road, which we left shortly for Gothenburg and Uddevalla and the Norwegian frontier where we switched back to driving on the right hand side once more. I am glad to say that this changing of sides worried me not at all, and on our arrival at the Norwegian frontier we had to put our clocks on another hour.

A few odd butterflies were seen on our way through Sweden: browns, whites, and the odd red admiral, with a few of the larger fritillaries, but accurate determination was, of course, not possible. Between Gothenburg and Uddevalla, we ran into two almost tropical storms, but otherwise, throughout our journey, the travelling weather was good.

We duly reached Oslo after a very hard day's drive, and were glad to check in at our hotel and settle down to dinner, for it is our habit when travelling to have but the merest snack between breakfast and dinner. The following day we spent in business calls, and we were taken to dinner at a charming lakeside restaurant near Vikesund; the ravages of *H. euonymellus* were again apparent on all sides, and an odd red admiral was seen (accounted for by double summer time), and the ubiquitous *Xanthorhoe montanata* were about all the other lepidoptera noted.

On the morning of 12th July we left Oslo for Bergen, and this was our hardest drive for much of the road was unsurfaced macadam with

many potholes, and it is this feature which seems to account for the slowness of Norwegian driving. Odd sections had been asphalted and gave a beautiful smooth-running surface, but these areas occur mainly in the towns and villages where there is a 40 km. speed limit anyhow. We had been told by our host of the previous evening that ten and a half hours of hard driving should see us in Bergen, including the ferry from Kinsavik to Kavandal, but the journey took us a full two hours longer. In Bergen, when we mentioned this to one of our business friends he replied: "You should not take any notice of what he says, he was a spitfire pilot in the Norwegian force with the R.A.F. in the war".

A most welcome meal was available for us on our arrival at the hotel about 11.30 p.m., and so to bed. The following day was occupied with business visits, finishing up with dinner at the famous Fløyen restaurant at the head of the funicular railway, overlooking Bergen, with a view out to the open sea. The ever-changing light on the surrounding hills and water made these views of continuous interest.

We made our final business calls on the morning of 13th, and in the afternoon set out for our week's holiday. All our Norwegian friends had advised us to visit the Lillehammer district, so we booked night accommodation at Leikanger, and for a week at Nordseter, taking care also to book for the ferries from Vangsnes to Hellen across the famous Sognefjord, and also back across the fjord from Kaupanger to Laerdal. Leikanger, where we spent the night, lies between Hellen and Kaupanger, and the country there consists of the typical small farms. We were now on holiday, and could take things more easily, so we had given ourselves two days to cover this threehundred odd mile journey and, in spite of a faulty tyre causing slight delay while I changed the wheels, we reached our Nordseter hotel in time for a bath and change for dinner. Our journey from Leikanger lay through Geilo, Gol, Dokka and Gjøvik, and alongside the large lake to Lillehammer across the bridge. Lillehammer is a pleasant little town on the lakeside, apparently relying on a large pulpmill, with its attendant masses of pulpwood floating on the lake, for its main industry. Nordseter is fourteen kilometres to the north-west. The road rises sharply at first in three hairpin bends, and then wanders upwards through farm land at first and later through spruce woods until these woods thin out to the high rocky moorland on which Nordseter stands. This is really a winter sports resort, but the three largish hotels are open for the summer trade, and small wooden houses and cottages with one general shop and a kiosk for the sale of postcards and sweets make up the village.

The moorland is covered with clumps of a small juniper determined by my friend T. R. Eagles as *Juniperus communis*, and the curious little mountain birch, *Betula nana*, with its small round leaves reminding one of a maidenhair fern with half-inch leaves. I understand that this plant is the food of *Nepticula nanivora* Klim., but although the moth flies in spring and is single brooded, the mines do not appear before September, the larva probably going into diapause shortly after hatching from the egg, but there is no proof of this and the matter is still under research by the specialists.

After our first dinner here, the evening being fine, we set out for a short stroll to evaluate the micro population and I saw many likely-

looking species, but as I had only half a dozen pillboxes in my pocket and no net the catch was necessarily limited, but showed the population to consist mainly of *Ancyliis*, *Argyroploce*, *Eucosma* and *Argyresthia* species, and my hopes were raised for the enjoyment of an active collecting week. Saturday, 16th July, however, brought in a wet period, and after driving into Lillehammer for yesterday's "Daily Mail" and "Telegraph" we set off along the main road northwards, and when well clear of the town, we found a spot where my wife could walk and I could look for *Nep.* mines, the only possible form of collecting in the wet weather. On *Pyrus aucuparia* I found many short gallery mines which should be *N. nylandrella* Tengstr. but Carolsfeld-Krausé was not satisfied with them, considering the frass to be too heavy for that species. I got four mines with green larvae in them, but although a variety of pupating sites was offered, all were refused and the larvae eventually, probably under a "beatnik" influence, settled down to die without having made any attempt to spin up. This is most disappointing as it will probably be a long time before I shall be in a position to revisit this district. Most of the mines contained larvae either dead from virus disease or eviscerated by one of the predatory bugs or spiders. As elsewhere, *H. euonymellus* was much in evidence wherever *Sorbus* or *Pyrus aucuparia* bushes were to be found, the moths even flying in the rain.

Birch showed a wide gallery mine, but I was too late in the season for larvae.

In the afternoon we tried the Nordseter moorland, well armed with plastic raincoats, and were successful in getting a few micros and saw also one or two *Zygaena exulans* Hochenw.

On Sunday, 17th, a similar programme was followed, but on this occasion we drove northwards on the other side of the lake, with similar results excepting that the *P. aucuparia* *Nep.* mines here were nearly all blotch mines, reminiscent of those of *N. plagiolella* Stt., common at home in the leaves of blackthorn and plum: these, C-K told me, were *N. sorbi* Stt., but here again only one was found containing a living larva. During a bright period in the afternoon, we again set out to explore the moorland, this time taking another path leading through woodland with occasional open boggy grassland, and I was able to take one or two *Boloria* for our friend Alexander B. Klots of New York.

Wednesday and Thursday turned out warm and fine in the sun, but a cool breeze was blowing: *Z. exulans* positively erupted, being present in thousands so that it was difficult to avoid treading on them. Daily on the moor, wet or fine, we saw singles and pairs of *Parasemia plantaginis* Linn., always in good condition, and we saw several webs, probably of a Lasiocampid, with colonies of half-grown larvae, grey with black spots, in close formation, side by side on the outside of the web, and odd members from time to time giving a sudden twitch, probably with the intention of frightening me. There was also an Agrotid with black forewings and paper white hindwings, an excellent example of dazzle camouflage, which flew up from under one's feet and flew very conspicuously for a few yards and then closed its wings and dropped to the ground. *Emmelesia* species were also seen.

Micros, when disturbed from the junipers and birches, had in common a most annoying habit of flying off horizontally and suddenly,

without warning, taking a vertical dive into the sphagnum moss where it was practically useless to pursue them for, even if found, they were by then unrecognizable, and the damp moss was anything but good for the pillboxes.

On the 20th we again took Monday's moorland path where more *Boloria* were taken, and an off-white black bordered *Colias* was seen, probably *C. paleno* Linn. v. *europome* Esp. On a sharp grassy bank at the end of this path I was pleased to find *Crambus ericellus* Hübn., and was also most gratified to take *C. maculalis* Zett., a spectacular black, white-spotted species of the mountains. This was followed the next day by three more typical specimens, and what I take to be a variety of the species, the black being replaced by sooty brown and the white pattern being extended and diffused over the disc; however, the fasciae seemed to be similar to those of the typical specimens.

Almost everywhere where *Populus tremula* was to be found, the trees were heavily infested by *Phyllocnistis* mines, probably *suffusella* Zell. on the upper surface and *sorhagenella* Lüd. on the under surface: the infestation was such that the trees gave the impression of a plum tree with the silver leaf fungus. The top side mines gave the impression of a slug having crawled over the leaf, while the underside mines were more regular, being equally shallow, but with a regular central line of frass. I separated the mines into top, bottom, and leaves with both top and bottom mines but, unfortunately for me, the only lot to produce imagines was that containing both upper and under mines, so I have still to separate the species by other means.

I was struck by the apparent shortage of Pyralid moths other than the Crambidae; *Mesographe lutealis* Hübn. was common on the lower levels in the hedges, but beside this, I only saw one *Eurrhynx hortulata* Linn. (*urticata* Linn.), one *Endotricha flammealis* Schiff., and three *Scoparia* spp. so far unidentified. Of the plumes I took one *Platyptilia tesseradactyla* Linn. one *Oxyptilus hierachii* Zell.: *Platyptilia ochrodactyla* Hübn. was to be seen about the tansy clumps and, of course, *Pterophorus pterodactylus* Linn. was common along the hedges.

When determinations have been completed I propose to publish the list as a note to be taken with this account, but its immediate inclusion would seem unessential.

I suppose that a proper conclusion to this account would be to say that we left Nordseter in brilliant sunshine, but this was not the case, it was cold and cloudy with occasional flurries of rain. The weather cleared somewhat as we went south and we came in for three strawberry seasons; one in England, one in the Bergen district, and a third on our way back through Hamar; the market was in full swing, with large quantities of fine strawberries.

We passed from Norway to Sweden through deserted frontier posts, it being Saturday afternoon, and we reached Gothenburg in the rain in comfortable time to spend the night there, setting off on Sunday morning for Helsingor, Elsinore and Copenhagen, with another short visit to C-K, with all too short discussion of my catch, especially the Neps., and then on to Gedser and the ferry to Grossenbrode, where we arrived after 11 p.m. to see *Leucoma salicis* L. flying in numbers round the fluorescent lights surrounding the port offices (we had seen these as larvae on the bushes at Grossenbrode on our way out), and I was

particularly taken by the range of size of the adults. Here, to add to the variety, we spent a comfortable night at a fisherman's cottage, all the orthodox accommodation having been booked before our arrival. I would complement the village on having an accommodation organizer who took considerable trouble to see that we got a bed for the night. After a leisurely breakfast we set out once more to drive through Germany, mostly by autobahn with the headaches previously described in traversing the space between the end of one and the beginning of the next. We followed our outward road, and again fetched up at Hengelo for the night, then on to Antwerp, where we called on resident cousins, and so to Ostende, Manston and home on the following day.

It is strange, and I re-experienced the feeling while writing this account, of the difficulty of realizing that starting out in the morning, driving a long distance and arriving in the evening are all parts of the same day! One feels that one should arrive on the day after departure.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

*PYRAUSTA PERLUCIDALIS* HÜBN. AND OTHERS. On June 25th, 1960, my friend Mr. A. J. Dewick took a specimen of *perlucidalis* in his moth trap on Bradwell-on-Sea; he rang me up recently and I have checked the identity of the moth for him. It was almost certainly a member of an immigrant rush that lasted three days, June 24th-26th. On the 24th there were over 120 *Leucoma salicis* Linn. and one *Dioryctria splendidella* H.-S., on the 25th 40 *salicis* and the *perlucidalis*, and on the 26th over 20 *salicis* and one of the large light continental form of *Itame fulvaria* Vill. I should here mention that although Mr. Dewick has used an immense light trap since the end of the war, lit by mercury vapour for the past ten years, in all that time he has previously taken only 3 *salicis*.

On July 3rd Mr. Chalmers-Hunt netted another *perlucidalis* in Kent flying by day, and Mr. D. ffennell captured a very worn but recognizable specimen at Southwold in Suffolk on August bank holiday. All these specimens were taken after the Wood Walton brood was nearly or quite over; it was fully out this year on June 4th.

I think that it is a fair inference that like *Loxostege sticticalis* Linn., *L. palealis* Schiff. and *Evergestis extimalis* Scop., *perlucidalis* is an immigrant to this country which forms a colony under favourable conditions. As is well known, *extimalis* is at present common in a locality near Higham where it was for many years completely unknown, whilst *palealis* was from 1930-40 so common near here that I could kick up fifty in an hour, and there were literally thousands of larvae, two or three in every wild carrot head. It is completely gone from there now, as is the large colony of *sticticalis* I found near Tuddenham in 1955, and that insect has now returned to its customary one or two a day in the Brecks. In that year, significantly enough, Mr. Dewick took *sticticalis* at Bradwell-on-Sea.

It seems, therefore, quite possible that the Wood Walton colony is of fairly recent origin which removes a difficulty which has always occupied my mind.

As is well known, for many years prior to his death in 1947, J. C. F. Fryer (Sir John Fryer, K.B.E.) and H. M. Edelsten were doing intensive work at Wood Walton on *Hydrillula palustris* Hübn., carrying on through what we now know to be the emergence time of *perlucidalis*. These two were both indefatigable and brilliant collectors, and both greatly interested in Pyralid and Plume moths, especially Fryer, who was keener on them than on any other group.

When the discovery of *perlucidalis* was first announced, it was taken for granted that they had passed it over as *Perinephela fuscalis* Schiff. for which insect Mr. Mere, its discoverer, first took it. In this connection it must be remembered that Mr. Mere had at that date only recently begun to interest himself in the group, and had no acquaintance with *fuscalis*. When, however, thanks to Mr. Mere's kindness, I visited Wood Walton and saw *perlucidalis* alive, I could not imagine how Fryer, with whom I had often collected, could have overlooked it, especially as Mr. Mere's first specimens were netted at dusk, and not taken at m.v. light. When alive, *perlucidalis* has no resemblance to *fuscalis*, it looks indeed like a tiny *Notarcha ruralis* Scop., except for the spot on the forewings. It belongs to the class of Pyrales that sit with their wings extended like *ruralis*, *Eurrhyncha hortulata* Linn. and *Phlyctaenia sambucalis* Schiff., and not in a triangle like *fuscalis*, *Phlyctaenia lutealis* Hübn. and *Pyrausta olivalis* Schiff. The only insect to which it has a superficial resemblance in life is *Microstega pandalis* Hübn., from which, however, it is at once distinguished by its much whiter more transparent wings, apart from the spot.

It seems to me probable, therefore, that the Wood Walton colony is of comparatively recent origin and has at any rate greatly increased in numbers since 1946, when Fryer last visited the fen.

Fryer not only had a very good eye for an insect, but was exceedingly clever at breeding. When he, Capt. Cyril Diver, and myself found *Crambus contaminellus* Hübn. and *Harpalia fulvalis* Hübn. at Parkestone in 1932, we agreed to leave their life histories to him; he bred both successfully. He also re-discovered *Eucnaemidophorus rhododactylus* Schiff. at Chatteris and *Phycita boisduvaliella* Guen. at Southwold in the 1920s, when both were lost insects and no doubt all will remember his discovery of *Nonagria neurica* Hübn. in East Anglia.

I wonder how many now remember his gay and brilliant personality; even Cockayne once told me that if Fryer differed from him, he immediately re-examined his own point of view, a compliment that was paid to few!

We collected together in many parts of the south of England, the last time in July 1939 when I took him to see *Anania nubilalis* Hübn. at Benfleet and in 1946 we were planning an Irish expedition, which was frustrated by his premature death in the following year. Fryer was delightful to collect with; he was always amusing, he had a light dry humour quite distinct from the flow of animal high spirits that characterised Clutterbuck and Fassnidge, gaiety is the exact word.

He and Cockayne together were fun; I compared them with Wilde and Whistler, the one full of amiable wit, whilst the other liked to get home with the point every now and then.



# Lepidoptera : Some Unusual Larval Foodplants

By P. A. DESMOND LANKTREE, F.R.E.S.

The examination of plants over a period of time may occasionally result in the discovery of larvae feeding on plant species either little known to be, or not previously recorded as their food, and with the less polyphagous species of Lepidoptera, this information can be useful as well as interesting.

The following account comprises some observations of this kind selected from the writer's experience.

## 1. *Mimas tiliae* L.

The *Radio Times* for 22nd August 1952 published a letter from a Mr. George A. Hastain of Worthing who, in expressing his appreciation of a then recent nature programme, recalled how "many years ago" he accidentally discovered a larva of *M. tiliae* feeding on cherry. Mr. Hastain added that he had always thought this to be most unusual, for he had never seen nor heard it stated that cherry is one of the foodplants of that caterpillar.

The present writer hadn't either, and having a nearly full-grown larva of this species in captivity at the time at Ealing, and a cherry tree available in the garden, an experiment was promptly arranged.

The larval quarters were cleared, and the larva supplied with fresh sprays of lime and cherry leaves of approximately equal size and quantity. It was found that the larva not only accepted the cherry readily in the presence of the lime, but for three days fed steadily on both without apparent discrimination.

The larva ceased feeding on 25th August, assumed its pre-pupal colours and sought to go to earth: it pupated successfully on the 31st.

## 2. *Orgyia antiqua* L.

During the years 1928-31, larvae of this species were noted regularly on *Pyrocanthus* (firethorn) in the Ealing district and some of these were reared to adults on this attractive plant alone.

As Mr. P. B. M. Allan's useful book on foodplants informs that the species feeds on most native deciduous trees and shrubs, perhaps it is not surprising that it should have been found to have adopted *Pyrocanthus* as well. It is thought worthy of mention here however, because during the years 1952-58 the writer was again resident in the Ealing district, and noted that while larvae of *O. antiqua* were as abundant as ever, they were perhaps most frequently seen on lime, rather less often on hawthorn and other plants, but never once during this period on *Pyrocanthus*, yet both lime and *Pyrocanthus* were probably as abundantly grown in this district some twenty or so years previously as during the later period mentioned. Many individual plants of these two species known from earlier days were indeed clearly recognised by one feature or another during the later period.

Whether this apparent avoidance was due to any change in the constitution of the *Pyrocanthus*, the *antiqua* larvae, to selection exercised by different races of *antiqua*, to chance dispersal of the sedentary females and therefore of their ova, or to lack of sufficiently wide observation is an open question, but perhaps larvae of this species might accept *Pyrocanthus* readily enough as an alternative food in captivity.

Possibly rather more surprising was the recent discovery of two larvae of this species feeding on broad-leaved dock (*Rumex obtusifolius*) in East Oxford; in captivity they continued to feed on this plant, spinning up on the 28th July and 2nd August 1960 to produce respectively ♂ and ♀ pupae within three days of spinning.

In the way of low-growing plants, Mr. Allan gives mention of the monocotyledonous sedges and rushes as a food of the species, while it will be recalled that the docks are dicots.

### 3. *Hipparchus papilionaria* L.

During the early part of one of the years 1928-31, it is not now recalled which year, some five or six larvae of this species were found on *Pyrocanthus* at Ealing and subsequently raised on this food alone in captivity. They duly spun up and the pupae were eventually transferred to a roomy but rather battered cardboard box. Enquiries as to the box's whereabouts a few days later, however, revealed that, deemed virtually empty and of little use, it had been disposed of.

Mr. Allan gives birch, beech, alder, hazel and broom as foodplants of this species.

### 4. *Abraxas grossulariata* L.

This observation is really a negative record aimed at bringing to the fore an old mention of "*Rhamnus*" as a foodplant of the species by Kappel and Kirby, though they do not state whether this was observed on the continent or in Britain, and it could have been either from the nature of their work.

In 1958 a young brood of this species from Oxfordshire was offered *Rhamnus frangula* in captivity but rejected it in the face of starvation. After some ten days of wandering over the plant without feeding, they were given sloe on which, avidly attacking it on arrival, they quickly recovered, and were returned to this plant in the wild.

Mr. Allan's collected records do not include *Rhamnus*, but that is not to say that one or other species of buckthorn may not be acceptable to the species in some regions.

### 5. *Biston betularia* L.

South gives oak, birch, elm, beech, willow, plum and other fruit trees, a list to which Stokoe adds bramble and rose, and Hyde, lilac, while Allan states that the larva has been found on almost every species of native deciduous tree and shrub.

Of these four authors, however, Mr. Hyde is the only one to give a foodplant which is not a tree, shrub or bush, for he also mentions, and figures, a larva found feeding on golden rod in his garden.

If the present writer wished to find this species in suburban London, he would first turn his attention to the leafy shoots round the boles of lime trees, for it was in such places particularly that the larvae were commonly found by him in Ealing during 1952-58, and while this tree is not specified by South or Stokoe, it is by Newman and Leeds.

The last place he would have looked though, would have been well towards the middle of a sizeable lucerne field, yet it was in such a place in North Berkshire that, on 3rd October 1959, the writer found one accidentally while examining lucerne leaves for ova of another species. The nearest trees were those bordering one side of the field

at least two hundred feet away, and these were nearly all beech, a normal foodplant, and one from which the larva could conceivably have strayed. It was a green form larva, whose colour very closely matched the lucerne stem to which it clung.

In captivity the larva fed readily on lucerne alone until 9th October, when it began to wander. On the 10th it was found to have settled among some chips of dry oak bark where it duly pupated on the 15th. The moth that emerged on 19th March 1960 was a ♀ of the *carbonaria* form. While May and June seem more normal times for the imaginal appearance, this pupa was not only formed above ground in an exposed position, but was kept in a warm room through the winter so the eclosion date is not so surprising.

#### 6. *Gonodontis bidentata* Clerck.

While Allan sums up the food for this species by saying that the larva has been found on almost every species of native deciduous tree, and also on larch, bilberry, juniper, broom and tree lichens, the following note may be of interest.

The species was common in Ealing from 1952-58 and the ♂♂ were regular visitors at ordinary electric light. In the summer of 1957, however, a ♀ attracted to light deposited a solitary egg on a large potted black currant bush by the window. The larva was permitted to continue its development on this plant. While young, it nearly always returned to the stem base between feeding periods and lurked there for much of the day close to the soil. In its later stages though, it chose to rest on the outside wall of the house, climbing down and through the open window to feed on the bush, more often and for longer periods during the evening, but occasionally for relatively short periods by day as well. One day, when almost if not quite fully fed, it failed to return.

#### 7. *Heterogenea asella* Schiff.

During one of the summers of 1929-31, whilst the leaves of a long row of poplar trees were being examined near Seaford, Sussex, a larva of this species was found. No more larvae of the same species were revealed by the adjacent trees that day, but a later examination of the tree on which the original find was made produced at least one more larva. These distinctive larvae were quite large when taken and were fed for some weeks in captivity on poplar, but they failed to survive. Although the year is no longer certain (part of each of the summers mentioned was spent in this locality, but no contemporaneously written account exists now), the month was almost certainly July; it so happens it could not have been later in any case, and it is very unlikely to have been any earlier.

To quote South on this species, he says of the larva that it "... is found, by searching, in August and until October, on the foliage of beech and oak. Birch has also been mentioned as a foodplant, and on the continent it is said to feed on poplar, lime, hazel and hornbeam". When the larvae mentioned were discovered the writer was rather young, but also well enough acquainted with South's works. As the larva had been reported as feeding on poplar on the continent, and favourable conditions are well known to hasten the life-cycles of some

species, the incident was then thought probably not to be very remarkable.

This opinion has since been revised however, for firstly, despite the many poplars examined since those days, no larva of this species was ever rediscovered feeding on their leaves. Secondly, no other record of the species feeding on poplar in Britain has been found, though looked for (incidentally, Mr. Allan's book, compiled as it is from many records, unfortunately cannot help here, as no reference appears to have been made therein to the Zygaenidae, Limacodidae, Cossidae, Hepialidae or Sesiidae). Thirdly, despite the above remarks about favourable conditions as a possible reason for July larvae, the fact must also be recalled that they were in an advanced state of development when found (and as mentioned, this was not later than July), which indicates that oviposition must have been remarkably early.

Reflecting on these points then, one might wonder if these larvae could have been the progeny of a female of continental racial origin, for, apart from the matter of the foodplant, if some of the continental races should perhaps habitually breed a little earlier in the year on their home territory, it seems probable that they would attempt to do the same here under comparable conditions. The locality mentioned is also coastal, and while no evidence of migration appears to have been collected by Dr. Williams for this species, such an act is one possibility among the several methods of transference that might be considered in attempting to account for this record.

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## A Note on *Lampides boeticus* Linn.

By W. L. COLERIDGE

In early July of this year I returned from France, bringing with me some flower buds of the everlasting pea *Lathyrus latifolius* in which were a few larvae of *Lampides boeticus* Linn. the long-tailed blue.

On arriving home, I found that owing to the intense heat while traversing France, the flower buds had rotted down to a sticky mess and I could only discover two larvae, both in the last instar. I put these in a fresh container with the only two peduncles of flower buds which had not completely rotted; each of these had four buds which I examined most carefully, but no more larvae were to be found on or in them.

The next day, July 13th, I went to the sea cliff above Meadfoot, Torquay, to get some more of the foodplant. I picked all the flower buds I could see, and next morning tipped these into the container with

the two larvae from France, and removed the two, by now dead, flower buds I had brought from France.

Two days later, on examining the container, I found six larvae, the two full fed original ones and four smaller ones, the latter in the penultimate instar, which I am quite sure were not there before. I examined the plastic bag in which I had brought the foodplant from Meadfoot and found two pellets of frass.

I again went to Meadfoot and picked every flower head I could see—only a few as I had practically cleared the few straggling plants on the previous occasion. These were carefully examined but no further larvae were found.

I have found this butterfly to be present all over France wherever the foodplant is growing, but owing to its quick darting flight and dingy colour, it is exceedingly difficult to see, even when one is watching for it. The larvae, which feed inside the flower buds, are also difficult to detect, and it may well be that this species is not so rare in England as it is thought to be.

It is an interesting coincidence that where I picked the foodplant is only about half a mile from where the late Mr. W. Kerr, whom I knew well, took three specimens of this butterfly in his garden some thirty-four years ago.

There is no question about the identity of the larvae as all four butterflies emerged from the pupae between August 5th and 9th. I did not report the matter previously because I was not quite sure of the identity of the larvae.

I have been to France collecting some six or seven times since the war and have been on the lookout for *L. boeticus*, but until this year, I saw none. This year, having once seen it, I found it on practically every patch of its foodplant in France, but it needs good sight and patient watching for it.

The Gnoll, Bishopsteignton, S. Devon. 15.viii.1960.

## *Coenotephria sagittata* Fabr. in Nottinghamshire

By R. FAIRCLOUGH

While I was attending a Ministry of Education Course at Retford in the second half of July, I had the good fortune to accompany Mr. F. R. Hall, a Nottingham botanist, on a brief field meeting to the north of the county in one of the afternoon breaks. We arrived in the area to be met by a thunderstorm and, after the rain ceased, we had not much more than half an hour before we were deluged again. Mr. Hall had pointed out a flowering plant of the Meadow Rue growing by the roadside ditch just before we arrived, and when we came across a plant which was in seed on our short walk, I naturally looked at it with interest, though with no thought of finding larvae of the Marsh Carpet.

A friend and I have often talked of the difficulties of finding this species, and indeed at one time we wondered whether it had disappeared altogether. We were delighted when Mr. G. M. Haggett made known his re-discovery of larvae in Norfolk a few years ago. The moth must be having a periodic increase in numbers for it has been found in other places as well.

I therefore examined the plant before me just to see what the seeds looked like and was about to turn away when I spotted a tiny larva sitting in a doubled-up position on one of the stalks. This led to the discovery of eight in all on the one plant. My interest in the botany became confined to *Thalictrum*, and I had time to search a big clump of the plants where I found four larger larvae before we had to retire. The following afternoon I returned and examined the not-too-plentiful plants over a distance of a mile along the waterway. These were not obvious for there was a thick growth of other vegetation. Larvae were found on only two of the seed heads. The larvae fed quickly and had pupated by the 31st July.

I am not aware that *sagittata* has ever been recorded from Nottinghamshire, a locality farther north than those given in the books. I am pretty sure that it must also occur in Lincolnshire. On a general note, one wonders again what is the distribution of many of our moths. There are so many entomologically unexplored areas in the British Isles.

14.viii.60.

## Current Notes

Some of our readers may have looked a little askance at a letter headed 'Chemical Sprays' by Emeritus Professor J. W. Munro in *The Times* on 2nd August last. "I do not know", he wrote, "nor can I find anywhere in the literature of the subject, a single instance where any species anywhere has been wiped out by the use of chemical sprays". We ourselves could tell him of several small colonies of not-too-common plants which have been obliterated by the use of sprays in fields which we know. Perhaps most botanists have had similar experiences. It seems unlikely that anyone would take the trouble to record such a happening since the plants which inhabit, in this island, single and very restricted habitats can be counted on the fingers of two hands. Moreover, the habitats of most of these very rare species are far removed from places where spraying is carried on. But it is with the second paragraph of Professor Munro's letter that we deal here.

"Instances both of birds and insects which have been destroyed by the ruthless 'collecting' of 'naturalists'," the Professor continued, "are known, however. The fates of the osprey and of the swallow-tailed butterfly are examples of that". As for the Order Lepidoptera we take leave to doubt if the ruthless collecting of naturalists has had anything whatever to do with the present absence of *Papilio machaon* L. from some of its former haunts. But as its habitats preserve it from the ruthless spraying of farmers its decline is still to be attributed to the ruthless collector, if we have interpreted the Professor's meaning correctly.

'Collectors' form an infinitesimal portion of a lepidopteron's predators. Some moths lay 2,000 eggs, and the proportion of mature insects resulting therefrom rarely exceeds one per cent. Then the bats and birds start to work. And, of course, there are various calamities which destroy entire broods; so that the population of a species in a habitat may remain more or less stationary, fluctuating only be-

tween the normal limits of the species. This is fortunate for market gardeners and for all who grow vegetables. If no insect had other predators than collectors this earth would be uninhabitable by human beings and indeed by all herbivorous animals—and by the carnivores which feed upon the herbivores! The ecologists tell us (though collectors don't need any telling) that within quite narrow limits every insect has its normal population density in each one of its habitats (though as Dr. R. A. Fisher pointed out some years ago the factors which govern the size of a population in any habitat are not so simple as some of us had thought). But, broadly speaking, if one or other of the predators fails or if there is a physical change in the state of the habitat advantageous to the species, we all notice—in the case of butterflies—how common the species has become.

But in the case of the smaller butterflies it is only the entomologist who notices these fluctuations in population density and there is no doubt that some of the smaller butterflies are affected adversely by sprays. In some places crop sprays windblown over hedges do undoubtedly affect not only species that feed on hedgerow shrubs but those which inhabit the roadside verges. Thus a certain number of larvae in such situations are destroyed; for even if some of the larvae rest on the undersides of leaves the plants themselves are often killed. Of this we had ocular evidence last year, the verges of a flowery country lane being destroyed, and hideously destroyed, for about one mile. We enquired at a nearby cottage and were told that the adjacent fields, on both sides of the lane, had been sprayed with 'weed-killer'. No specimen of the Small Copper, once common there, was seen.

Some years ago Allan pointed out (*Entomologist*, 76 (1943), p. 47) that every species of Lepidoptera seems to have what he called a "survival density" and that if the population in a particular habitat falls below this density the species must either emigrate or become extinct in that place. This is probably what happened in the case of the Large Copper, the Black-veined White, the Mazarine Blue and several other species which have become extinct during the last hundred years. In days gone by the Large Copper seems to have ranged widely through our island, from the Channel to Yorkshire, from Norfolk to Monmouthshire, wherever there were large fens in which its larval foodplant flourished. It was only when it had become extinct everywhere but in the Lincolnshire, Cambridgeshire and Huntingdonshire fenland that collectors set the fenmen (and women and children) to work, offering so many pence apiece for the caterpillars, that collecting began to play a part in the extinction of this species. But we doubt if even this concerted attack really played much of a part, for there were still other large expanses of fenland (*e.g.* in Lincolnshire) where also the species was dwindling to extinction. It was the physical factor of *climate* that brought about extinction, even as it did in the cases of the Black-veined White and Mazarine Blue. Certainly it was not the ruthless collecting of naturalists.

As for the birds we doubt if the bird-stuffer or egg-collector played any considerable part in the near-extinction of the kite since old writers

tell us that in the middle ages it was commonly to be seen scavenging in the streets of London. Were there bird-stuffers and egg-collectors in those days? And were ospreys and white-tailed eagles likewise persecuted by these same enthusiasts? It seems unlikely: if so, why did they not also exterminate the golden eagle? 'Springes' did not reduce the numbers of our nesting woodcocks though they obliterated the ruff, and cultivation has driven the bustards away. But in spite of the ruthless egg-collector and bird-stuffer the bittern still holds its own and booms its *joie de vivre* in many a marshy spot, even at Hammersmith not so long ago.

## Notes and Observations

ECHOES FROM THE PAST.—With reference to Mr. P. A. Desmond Lanktree's remarks (antea. 120), *The Standard* was a well-known London daily at the turn of the century. I remember it well, for my father took it regularly for several years. He was a City man and thought highly of its financial columns: I was more interested in its reports of county cricket matches, which I thought excellent. As we were taking it in 1899, I probably read the letters quoted by Mr. Lanktree when they were published, for I was just beginning to collect lepidoptera with the enthusiasm of a schoolboy. I still have contemporary notes in my own writing, stating that I found *P. brassicae* L. "very scarce" in 1899 and 1900, but "abundant" in 1901, and *M. stellatarum* L. "abundant" in 1899. I believe these records bear out the accuracy of this last observation, and I did not see the species again in such numbers until 1947.

Again referring to Mr. Lanktree's article, he will be interested to hear that *Strymonidia pruni* L. still exists in the area he mentioned (*l.c.*, p. 124), although not in the exact place where it was discovered. May I refer him to my note on this discovery (*Ent. Rec.*, 68: 99)?—H. SYMES, 52 Lowther Road, Bournemouth. 21.v.1960.

PHLOGOPHORA METICULOSA: A LATE EMERGENCE.—About midnight on 5th December 1959 I collected a freshly emerged male at rest in the lighted porch of a building at Bray, near Maidenhead. The evening was mild, and the moth was in the company of many male *C. brumata*.—G. H. B. OLIVER, "Corydon", Amersham Road, Hazelmere, High Wycombe, Bucks.

LEPTIDIA SINAPIS L. AB. GANEREW.—On 29th May I caught a specimen of the above in Northants. It is a male and, unfortunately, rather worn. I would be interested to know whether *ganerew* is the insect's proper name; if so, by whom and when was it first described? As a name for an insect it sounds improbable and I have always understood that Ganerew is the name of the place in Herefordshire where it was first discovered by A. B. Farn (vide *Ent. Rec.*, 68: 155). How fortunate that it was not the place with 52 letters which I can neither remember or pronounce—far less spell.—Lt. Col. W. A. C. CARTER, Briarfields, Sandels Way, Beaconsfield, Bucks. 18.vi.1960.



AN IMPROVED GLASS OVEN SUITABLE FOR BAKING LARVAL SKINS AND OTHER BIOLOGICAL MATERIAL.—This oven is made of heat resistant glass, the electric element being sealed in vacuum to give it indefinite life. The outer jacket is silvered so that most of the infra-red rays are reflected on to the material in the baking chamber. It is connected direct to mains and after a few minutes reaches a temperature of 250° C.

This oven possesses the following points of superiority over other such pieces of apparatus:

1. Providing it is not dropped it will give indefinite service.
2. Infra-red rays are used, which have a greater drying effect than most other forms of heat.
3. It can readily be cleaned by inverting, filling with soda solution and connecting to power supply.
4. If temperature control is required (that is, up to 250° C.) this may be effected by using a variable resistance in series and reading the temperature by a thermometer slid through a hole in the corked entrance. The thermometer does not need to be removed but only withdrawn until the required calibration is past the silvered part of the glass. Withdrawal will often not be necessary as the calibration will be visible anyway.
5. Similarly, the subject may be inspected without removal from the oven.
6. The temperature may be approximately adjusted to any required level without the use of a variable resistance. The current is switched on until the required temperature is reached, and on switching off, it will be found that this temperature will be maintained for a considerable time, as with a thermos flask.

This piece of apparatus has been designed with the help of a glass-blower acquaintance who would be pleased to make the apparatus at a reasonable cost. I would be pleased to hear from anyone interested.—L. G. STIMSON, 26 Pemberton Road, Lyndhurst, Hants.

GONODONTIS BIDENTATA VAR. NIGRA PROUT IN WESTMORLAND.—A fine male of this variety came to my light trap in Kendal on 27.v.1960. Records of this variety in Westmorland are few and this occurrence therefore seems worth recording. The type form is very common and shows considerable variation in both ground colour and markings. So far as concerns var. *nigra* I can find only two other Westmorland records. R. Adkin exhibited specimens of *nigra* from Westmorland at the South London Entomological Society in 1897 (*Entom.*, xxx, 327). There is also, in the record books of the old Kendal Entomological Society, a record of a specimen taken by R. H. Mallinson at Windermere in 1911. In his diaries, in my possession, the late Dr. R. C. Lowther of Grange-over-Sands states:—"No *nigra* at Witherslack"; nor does he record its occurrence at Grange. The Rev. J. Vine Hall tells me he has never seen *nigra* in this district nor has Mr. J. Heath of Grange—both active workers at the present day.

The variety is reasonably common in both Yorkshire and South Lancashire and one wonders if it is in process of spreading to this district.—DR. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 11.vi.1960.

*COLIAS HYALE* L. ON THE CONTINENT.—Our editor, when writing to me recently with news of the entomological world at home, remarked that such was the state of affairs that he was even thrilled recently by the sight of seven *P. napi* disporting themselves on the railway embankments between Bromley and London. From this I gather that butterflies at any rate are scarce at home which is probably only to be expected after last summer's scorching weather.

Here on the continent, or at least in this part of Germany, butterflies of all sorts are also by no means common, with one notable exception.

This exception is *Colias hyale* L. which has appeared in numbers—I first became aware of what I have assumed to be a northerly migration when I saw several specimens of both sexes flying over the meadows that flank the river Ahr in the Eifel south of Cologne on 8th May. These first specimens were very worn and the females only too glad to start depositing at once. Since this very early date their numbers have continued to build up very considerably, and over the Whitsun holiday, when my wife and I were camping in the Eifel, *hyale* was to be seen everywhere in the greatest profusion. Curiously, the majority of specimens were now in good condition.

Perhaps this may yet be a *hyale* year in England, and by the autumn provide our editor with something more exciting to look at as he travels between his home and London!—Major General C. G. LIPSCOMB, Cologne. 10.vi.1960.

*AGROTIS EXCLAMATIONIS* LINN. VAR. *PLAGA* STEPH. IN CUMBERLAND.—Two years ago I trapped an example of the extreme form of this variety at Great Orton in Cumberland. Dr. H. B. D. Kettlewell told me it was extremely rare, in the light of which statement, it is interesting to record that three more came to my m.v. light here at Penrith last year, while another three were captured this year. Last night a further specimen flew to the lights at the B.B.C. station at Skelton, Cumberland, and was brought to me for identification.—W. F. DAVIDSON, 9 Castlegate, Penrith, Cumberland. 5.vii.1960.

*HYGROCHROA SYRINGARIA* LINN. AND *CALOCAMPE UNDULATA* HÜBN. IN CUMBERLAND.—These two moths, considered to be local and rare in Cumberland, were caught in July of this year at the lights of the B.B.C. station at Skelton.—W. F. DAVIDSON, 9 Castlegate, Penrith, Cumberland. 5.vii.1960.

*CHRYSOLINA MARGINATA* LINN. AND *C. BRUNSVICENSIS* GR. (COL. CHRYSOMELINAE) NEAR PENRITH.—Last year I swept a Chrysomelid beetle from a grassy bank at the top of an occupation lane leading from Cumrew village to Cumrew Fell in Cumberland. Doubts about its identity led me to send it to Mr. E. B. Britton, who identified it as *Chrysolina marginata* Linn., a species of which there are only two previous records for the county, one of them early last century. This summer I took another species of the same genus on *Hypericum*, near Cliburn, which is in Westmorland though only six miles from Penrith. Mr. F. H. Day confirmed this as *C. brunsvicensis* Gr. I have no access to the Westmorland list, but this species has not yet been recorded from Cumberland.—W. F. DAVIDSON, 9 Castlegate, Penrith. 5.vii.1960.

*HERSE CONVULVULI* L. AT KENDAL, WESTMORLAND.—Two schoolboys, John Bateman and David Cottam, brought me a male specimen of *Herse convolvuli* which they had just found to-day resting on the outside of an hotel in Kendal. The specimen is rather worn and the left antenna is missing. The left forewing also exhibits a rather curious abnormality in that there is a small round hole through the wing just proximal to the origins of veins 8 and 9. At first I thought this hole was an artefact but closer examination revealed that the margin consisted of a well-chitinised ring.

Migrant lepidoptera have not been very plentiful this summer and perhaps the present occurrence augurs well for the autumn.—DR. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 9.viii.1960.

*ITAME FULVARIA* VILL. (*BRUNNEATA* THUNB.) IN SURREY.—It may be of interest to record that a male specimen of *I. fulvaria* came to my m.v. trap on the night of 27th June last. The moth, which was in poor condition, was rather large and pale in colour, and may well have been of continental origin.—J. L. MESSENGER, Stonehaven, Wormley, Godalming, Surrey. 10.viii.1960.

*MALACOSOMA CASTRENSIS* L. AND *SPAELOTIS RAVIDA* SCHIFF. NEAR SOUTHWOLD.—When on 30th July last Mr. J. L. Messenger and I were collecting in a marsh on the Suffolk coast a little north of Southwold, unexpected arrivals at our light were single examples of *Malacosoma castrensis* L. and *Spaelotis ravida* Schiff.

*M. castrensis* has, of course, a very restricted distribution in Britain. It is purely coastal, its headquarters being in the salt marshes round the Thames estuary and up the coast of Essex. Vinter, in his List of the Lepidoptera of Suffolk (1937), reports it from Bawdsey and Shingle Street in the south of the county, where many were bred from larvae in 1905 and it still occurred until at least 1928, and at earlier dates from Aldeburgh, rather further north. But our Southwold record is a northward extension of fifteen miles in its known range. Meyrick also gives Yorkshire for it, but I have been unable to trace the basis for this: there is no mention of the species in Porritt's "Yorkshire Lepidoptera" (2nd edition, 1904). Elsewhere, Adkin states that a colony was discovered in the marshes near Eastbourne, Sussex, in 1926, but I do not know if it still exists.

Records of *S. ravida* from any part of Suffolk can be numbered on the fingers of one hand. The last I know of is of two examples at light at Sotterley in 1935, which is within six miles of Southwold. I do not share the view which is sometimes expressed that most British *S. ravida* are immigrants or their immediate offspring, and I think that further work might reveal the presence of an established colony in the marshes round Southwold, which look very suitable for it.—R. F. BRETHERTON, Ottershaw, Surrey. 18.viii.1960.

*EUPITHECIA IRRIGUATA* HÜBNER IN SURREY.—Since it is often said that *Eupithecia irriguata* Hübner is now almost restricted to the New Forest, it is worth reporting that Mr. J. L. Messenger and I obtained one at light in a wood near Chiddingfold on 14th May last, and we got another on 20th May in the same place. Both were in quite good condition, despite the late date.—R. F. BRETHERTON, Ottershaw, Surrey. 18.viii.1960.

SCARCE IMMIGRANT LEPIDOPTERA IN INVERNESS-SHIRE.—Three rare species of immigrant have recently turned up in Badenoch, which is not on the usual routes of these insects. On 17th July, while I was in the South, a male *Acherontia atropos* L. was brought to Dr. C. B. Williams at Kincaig from Laggan. Then about 6th August Mr. B. Skinner tells me that he took a specimen of the very rare *Heliothis scutosa* Schf. at m.v. at Aviemore. Lastly, on 8th August, a female *Celerio livornica* Esp. was found at 6 p.m. on the back door-step of a farm near Kingussie and brought to me the next day. I wonder what exciting events are occurring in the South?—Commander G. W. HARPER, R.N., Nedaich, Newtonmore, Inverness-shire. 15.viii.60.

A REPORT OF PONTIA DAPLIDICE IN CORNWALL.—Capt. Maxwell Knight has had sent to him at the B.B.C. a letter from Mr. M. F. Tuke, Blackboards, Dulverton, Somerset, as follows:—

Dear Sir,

On July 14th on the Cornish coast near Doyden Point, south of Port Isaac, I found a "Bath White butterfly". This, I believe, is a rare visitor to this country. It was obviously in a weak condition and made no attempt to fly away except when I shook the plant on which it was resting; even then it feebly fluttered a short distance only.

I do not know whom to send this information, but no doubt one of your naturalists will, that is if it is of any importance.

Yours truly,

M. F. TUKE.

I am sending you this for the *Record* if you wish to use it. Perhaps other similar reports have been received.—S. BEAUFY, 98 Tuddenham Road, Ipswich, Suffolk. 20.viii.1960.

DOROS CONORSEUS F. (DIPT., SYRPHIDAE) AGAIN TAKEN IN ESSEX.—Some years ago, my friend Mr. P. W. E. Currie handed me five specimens of this large hymenoptera-like Syrphid. He had found them in 1950 and 1951 during the second and third weeks of June in those fields at Mickleham, Surrey, which are believed to have been a favourite haunt of H. T. Stainton. I have never managed to visit the locality during June myself and have failed to find the species when in the area in other months of the year.

On 11th June, this year, I joined Mr. C. O. Hammond at Fenchurch Street station, in the pouring rain, to visit the locality where he had taken the fly years ago in the Thames marshes near Leigh-on-Sea, when collecting with Mr. C. N. Colyer. The rain had ceased when we finally arrived at the edge of the marshes at the spot known to Mr. Hammond. Within a few minutes he had taken a specimen but further search produced no more examples. Mr. A. A. Low, on a previous visit, also found this Syrphid on a bramble bush close to the bush on which this 1960 specimen was obtained. Thus in both the Surrey and Essex localities the insect seems to haunt particular spots and appears to have a very restricted flight period.—J. P.

BRACHYOPA PILOSA COLLIN (DIPT., SYRPHIDAE) FOUND IN BERKSHIRE.—On 29th June 1958 Mr. A. A. Low took Mr. E. W. Groves and myself to his favourite area of Windsor Forest in the hope of capturing a late

*Calliprobola speciosa* Rossi. I saw one but it eluded my net.

Just as we prepared to leave the forest after searching a wide area, I noticed a *Brachyopa* with what seems to me to be the characteristic slow drooping flight of the genus, alight on a plant of Rose-bay Willow herb. This specimen I found to be a male *Brachyopa pilosa* Collin.

The specimens, types of the original description, were taken by Col. Yerbury at Lyndhurst, Hants., in early May 1894, 1896, 1897, and the fly has since been taken by Mr. E. C. M. d'A. Fonseca in Blaise Woods, near Bristol, Gloucs., in April and by Dr. C. H. Andrewes, near Aldenham and Bricket Wood, Hertfordshire, in May. The Berkshire capture thus extends the flight time by a full month.—L. P.

*EUTOLMUS RUFIBARBIS* MG. (DIPT., ASILIDAE) IN SURREY.—My friend Mr. A. le Gros recently handed me two flies taken by the late Mr. H. D. Swain. One proved to be a male *Eutolmus rufibarbis* and was labelled Otlands, Surrey, 8th August 1957. Both G. H. Verrall (1909) and Dr. B. M. Hobby (1931) regarded it as a rare British insect. The first Surrey record appears to be that of J. C. Dale's female specimen labelled 'Coombe Wood', 18th August 1817. Verrall caught a female at Weybridge on 29th June 1872. Mr. R. L. Coe captured one at Byfleet on 5th August 1931.

Mr. H. W. Andrews found two females that had captured *Thereva* ? *plebia* L. as prey in the sandy woods at Farningham, Kent, on 1st August 1925. These records appear to confirm, with the records from Berkshire, Suffolk, Dorset and Lincolnshire, that the species is to be found in sandy wooded areas in this country.

In Sweden, Melin (1923) found the fly haunting meadows and arable fields and watched a female laying eggs inside a sheath of grass, splitting the plant with her ovipositor. He found the larvae in sandy soil.

In this country, Verrall gave the flight period as 24th June to 29th August and later records have not extended this period.—L. P.

*A MIGRATION OF SYRPHIDAE* (DIPT.) AT SEAFORD, SUSSEX.—In view of the scarcity of records of movements of insects other than lepidoptera and locusts, I think the following note will be of interest.

The 6th August was close and sultry at Seaford, with a gentle breeze from the south east. It was the sort of day when one would not be surprised to see the ants swarming. About 12 a.m. B.S.T. when I went into the garden, my neighbour remarked that the flying ants were coming in and certainly the air seemed full of insects. However, a glance showed they were not ants but a steady swift stream of Syrphidae coming in from the south east and flying straight across the garden, up the hedge and bungalow wall and away. A few rested on the hedge and flowers but most went straight on. The streaming continued till 2.10 p.m. when it ceased abruptly.

Another neighbour, a very observant and well informed man asked me about the flies and informed me that the movement began about 11.15 a.m. Many millions must have passed during these hours but I have no knowledge of the width of the migrating stream. We are about three-quarters of a mile from the sea front. Later in the day I went down to the front but could not be sure that Syrphidae were more

numerous in the district than they had been before though my garden population had increased considerably.

During the first week of August, I have seen at least six *Volucella zonaria* Poda. and a medium-sized black and white chequered Syrphid has been and still is abundant (7.viii.60) but I did not notice any larger species amongst the immigrants than those sent to Mr. Parmenter for identification.

For some time during the movement a large gathering of swifts circled overhead at about 500 feet, so probably there was some depth to the stream. The wind was backing and by the next morning was almost due east, the weather still fine but cooler with occasional cloud sheets.

During the passage a few Large White butterflies appeared; four, then odd singles, then a couple, but I do not think there was any real movement of butterflies, merely casuals which we have been receiving all the week.—W. H. SPREADBURY.

IDENTIFICATION OF MIGRATING SYRPHIDAE FROM SEAFORD.—Mr. W. H. Spreadbury sent me 28 specimens of Syrphidae taken in his garden on 7th August 1960 when he was observing a movement of Syrphidae. They proved to be:—

*Syrphus balteatus* Deg., 3 ♂, 7 ♀.

*S. vitripennis* Mg., 4 ♂, 1 ♀

*S. corollae* F., 3 ♂

*Sphaerophoria scripta* L., 5 ♂, 2 ♀

*S. menthastri* L., 1 ♂

*Platycheirus albimanus* F., 1 ♀

*P. manicatus* Mg., 1 ♂

The "medium-sized black and white chequered Syrphid" noted in his garden is probably the well-known migrant *Scaeva pyrastris* L. which also breeds in this country, its larvae feeding on Aphididae.

Mr. Spreadbury, in his letter, said: "I managed to net some but it was no easy task to be sure I had captured the travellers. So no doubt my sample may contain some of the already numerous Syrphidae about the garden".

Each of the specimens was fresh, with undamaged wings, legs, hair and tomentum. The species all have larvae predatory on aphides but the adults whilst they take nectar from flowers, mostly feed on pollen. Examination of each specimen showed no trace of pollen except on one male *Syrphus vitripennis*. Although few grains were on the head, pollen excreta was present in the anus. The other specimens were empty of pollen. I have seen specimens of freshly emerged Syrphidae also free from pollen, taken in 1955 at Spurn, Yorks., by Mr. D. F. Owen, from a migrating stream of *Eristalis*, etc.

Mr. Spreadbury also informs me that "*Euonymus japonica* flourishes this year everywhere at Seaford, the shrubs being a mass of flowers. They are particularly attractive to the Syrphidae, most of the bushes were seething with them". It hardly seems unlikely that the specimens were garden residents but genuine immigrants.

Further enquiry at Seaford has produced reports from other Seaford residents showing the movement to have been on a front of at least half a mile wide and Mr. Spreadbury had been told of people being

driven off the beach by "hordes of wasps which flew straight at them". Obviously non-entomologists take Syrphidae to be wasps!

*Volucella zonaria*, *Scaeva pyrastris*, as well as the captured species listed above are all known migrants in France, Spain and some in India. J. W. Tutt, in his "The Migration and Dispersal of Insects", 1902, showed that there were records of Syrphidae migrating to this country dating from 1818. The directness of flight, the appearance of recent emergence and the avoidance of stops for food were noted by the more observant entomologists.

It would be interesting to hear of other observations of migrating Syrphidae, of any movements showing steady directness of flight, from inland as well as coastal localities. One speculates on what "triggers off" the movement. It seems that the newly emerged flies pay no heed to the need for pollen or nectar. Could it be that their emergence coincides with a movement of aphides, amongst whose colonies the Syrphinae will lay their eggs. Aphides are well known as drifting in large numbers in air currents, up to 10,000 feet and more, in Europe as well as over this country.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

**VOLUCELLA ZONARIA PODA (DIPT., SYRPHIDAE) IN BRISTOL.**—I captured a female *Volucella zonaria* Poda on 26th July this year as it visited the flowers of a Snowberry, *Symphoricarpos rivularis* Suks., bush in the grounds of Broadcasting House, Whiteladies Road, Bristol.—JOHN BURTON.

**THE AMATEUR ENTOMOLOGISTS' SOCIETY** will be holding its annual exhibition on Saturday, 1st October 1960, at the Buckingham Gate Schools, Wilfred Street, London, S.W.1. All interested in entomology will be welcome.—R. D. HILLIARD, 54 Gyles Park, Stanmore, Middlesex.

**THE NATURE CONSERVANCY** announces the establishment of one new Nature Reserve and extensions to two others in Wales. Notes on these areas are given below.

#### CWM GLAS, CRAFTNANT NATURE RESERVE

Cwm Glas, Crafnant, lies at the head of an upland valley which runs south-west for a distance of four miles from Trefriw in the Conway Valley. The Reserve, which has been established under a Nature Reserve Agreement with the Earl of Ancaster, and his tenant, Mr. J. Hughes, covers 38 acres of glacially over-steepened slopes between the 750 feet and 1,250 feet contour, broken by rock outcrops, and culminating in the summit of Moel Wen.

The Reserve lies on basic volcanic rock and has a rich flora, including a number of arctic-alpine species such as Mountain Sorrel, Hairy Rock-cress, Green Spleenwort and Brittle Bladderfern, which are here growing at a relatively low altitude. There is a remnant Ashwood with a rich ground flora and, while the predominant tree is Ash, there are, in addition, many exceptionally large Hawthorns. Together with plants typical of lowland woods and fertile soils such as Wild Strawberry, Primrose, Herb Bennet, Slender False-brome and

Sanicle, the wood contains Rock Stonecrop, Orpine, and Hart's-tongue Fern, which are more particularly characteristic of such shaded, rocky places in western Britain.

There is an agricultural tenancy over the Reserve and in order to safeguard the arctic-alpine and other special plants a small area is to be fenced to keep out sheep. Permits will be required to visit the fenced area, to collect specimens of animals or plants, or to undertake research. Applications for such permits should be made to the Regional Officer for North Wales, Headquarters for Wales and Bangor Research Station, Penrhos Road, Bangor.

---

#### NEWBOROUGH WARREN-YNYS LLANDDWYN NATURE RESERVE EXTENSION

In June 1955 The Nature Conservancy established the Newborough Warren Ynys Llanddwyn Nature Reserve in Anglesey. In 1956 and 1959 further areas were added. A further 78 acres have been purchased and the Reserve now covers 1,470 acres and has a coast line of ten to eleven miles.

The new acquisition is a rectangular area situated in the north-central part of Newborough Warren adjacent to the Forestry Commission boundary, and includes in its northernmost corner the ruin of an old farmhouse, called Clwt Gwlyb. A right of way runs along the western side from Penlon via Clwt Gwlyb and follows the Forestry Commission fence to the beach of Llanddwyn Bay (this was the ancient road to Llanddwyn).

Before the enclosure award of 1843 this was common land, but even after allocation to new owners it was apparently never worth fencing. Though subject to some light grazing by cattle and sheep, its main return was in the form of Rabbits and Marram Grass, both of which figured largely in the local economy. The presence of the Liver Fluke and the abundance here of its snail host (*Limnaea truncatula*) has rendered this damp and undrained low-quality grazing especially dangerous to stock in wet summers. The area is of great ecological and physiographic interest, as the boundary between mobile and fixed sand and the gradation between open and closed plant communities passes right through it.

Permits are required to enter those parts of the Reserve off the rights of way. It may prove necessary during the bird breeding season to place certain areas out of bounds even to permit-holders, but there will be no restriction on rights of way. Anyone wishing to undertake research, or to collect specimens of animals or plants will need a permit. Applications for permits should be to the Regional Officer for North Wales, The Nature Conservancy, Headquarters for Wales and Bangor Research Station, Penrhos Road, Bangor.

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THE SOUTH LONDON ENTOMOLOGICAL SOCIETY holds its Annual Exhibition on Saturday, 29th October, in the library of The Royal Society, Burlington House, Piccadilly, London, W.1, at 2 p.m. All are invited to attend and bring exhibits.



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## EXCHANGES AND WANTS

*For Sale.*—Entomological Cabinets, all sizes, due to change over to unit system.  
Details on application. Easy payments if required. R. W. Watson,  
"Porcorum", Sandy Down, Boldre, Near Lymington, Hants.

*For Exchange.*—"Field Lepidopterist", Tutt., 3 Vols. "British Moths", Morris,  
4 Vols., 1891. "Tineina", Stainton, 1854. "British Tortrices", Wilkinson,  
1859. Also wanted: Storeboxes, 13 × 9 or 14 × 10. Cartwright Timms, 524  
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*For Sale.*—Compact Portable Generator to run one or two mercury-vapour lamps.  
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Dune Gate, Clarence Road, Dorchester, Dorset.

*Urgently Wanted.*—"Meyrick's Revised Handbook of British Lepidoptera, 1928".  
Could anyone be persuaded to part with his copy for a good price? Dr.  
F. N. Smith, "Turnstones", Perrancombe, Perranporth, Cornwall.

*Wanted.*—5 to 20 large-drawer Mahogany Cabinet. Brady or Gurney preferred.  
H. N. Moon, "Budleigh", 319 Coniscliffe Road, Darlington.

*For Sale.*—Early run of Entomologist's Record. Vols. 1-37, 1890-1925. Bound in  
19 volumes in half calf. All offers considered. M. J. Cotton, B.Sc., 27  
Hatherley Street, Cheltenham, Glos.

*Orthoptera.*—Crickets of the subfamily Gryllinae (except domestic Species) and  
grasshoppers of the subfamily Pyrgomorphinae from all parts of the  
World required in any quantity for research work in morphology, taxo-  
nomy, cytology, and experimental biology; dry or fluid preserved or  
living. Please contact D. K. Kevan and R. S. Bigelow, Department of Ento-  
mology, McGill University, Macdonald College, Quebec, Canada.

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## RECORDS OF THE BRITISH ZYGAEINIDAE

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I have in preparation a paper on the distribution of the species of *Zygaena*  
and *Procris* found in the British Isles, with maps showing the geographical  
range of each species in these islands. I would welcome authentic records,  
especially from Ireland, Scotland, Wales and South-West England. Records of  
*trifolii* (both the early May-June subspecies and the July-August subspecies) and  
*loniceræ* would be of special interest, including any from southern England,  
as here the range of the two species overlaps. As these species, *trifolii* and  
*loniceræ*, are sometimes difficult to separate, I shall be pleased to determine  
any doubtful specimens, which should be sent to me by 31st December, 1960.

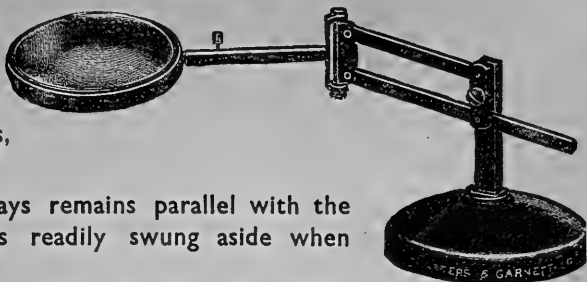
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W. G. TREMEWAN,

Dept. of Entomology, British Museum (Nat. Hist.), Cromwell Road, London, S.W.7.



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Insects

# THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

*Edited by* S. N. A. JACOBS, F.R.E.S.

*with the assistance of*

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## Collecting in Lapland, July 1960

By Major General Sir GEORGE JOHNSON,  
K.C.V.O., C.B., C.B.E., D.S.O., D.L.

Opportunity arose this year to visit Swedish Lapland and to see something of the rich insect and plant life of the Arctic summer.

The night tourist service from London airport left at 0330 hours on 4th July, arriving in Stockholm at 0830 hours after a stop at Copenhagen. A sleeper had been reserved in the "Arctic train" leaving Stockholm 1700 hours on 5th July, which duly arrived at "Abisko Touriststation" about 24 hours later.

Abisko, latitude 68° 23' N., lies almost 120 miles inside the arctic circle on the south shore of the large Lake Tornetrask. It is only a few miles from Narvik in Norway on the Kiruna-Narvik iron ore railway of last war fame. There are no roads, and the only communications are the electrified railway and a large motor launch on lake Tornetrask operated by the Touriststation Hotel.

The lake and hotel lie at an altitude of about 1000'; scrub birch clothes the side of the surrounding hills up to about 1500'. The hills rise to 3000' or a little more. Although so far north, the permanent summer snow line is still higher. There are snow wreaths and drifts on north-facing slopes which never melt but the general impression is that of the Cairngorms in May. One still has to climb about 2000' to find ptarmigan and the real high top vegetation, exactly as one does in Scotland 600/700 miles further south, a serious reflection on the inclemency of the Scottish climate!

The vegetation above the tree line (the trees are birch only) is very similar to the Scottish hills except for the absence of ling (*Calluna*). Other *Erica* species and related berry bearing plants replace it. The flowers include practically all the more desirable Scottish hill species; rarities growing in Scotland only on Ben Lawers and similar hills are often in profusion together with a few purely arctic species unknown in Scotland.

Unfamiliar birds actually seen included bluethroat, Siberian tit, brambling, blue-headed wagtail, rough-legged buzzard, Temminck's stint, long-tailed skua, redwing, fieldfare, willow grouse, ptarmigan; all these were breeding.

The weather for the past two days, July 7th and 8th, was excellent, with midday temperatures in the eighties. It then deteriorated. There was no prolonged rain or fall in temperature below 60° but it had a tiresome habit of clouding over daily about 11 a.m. as one reached the high ground, a few light showers would occur and the sun come out again as one came down in the evening, too late for the butterflies to become active. From 7th to 18th July there were only four really good collecting days.

The mosquitoes were quite bad; a first class repellent applied to all exposed skin every few hours was essential. Even so, they found out unprotected spots and were able to penetrate quite substantial clothing where this was anywhere tight against the skin.

The Touriststation Hotel is located inside the Abisko National Park where no collecting is permitted. The park itself has no merit other

than convenience, localities outside being as good or better. The park boundaries are reached 1 km. to the east or by taking the train to the next station to the west, Bjorkliden, 5 miles away. This is well outside the park and in a very good area.

On arrival it was found to be a very early season, at least two weeks earlier than usual; many of the butterflies it was hoped to see were worn or over, but, on the other hand, *Colias hecla* Stgr., which usually does not appear until late July or August, was flying before our departure.

The first two days were spent in the vicinity of Abisko Ost, a station on the line about a mile east of the Touriststation and outside the park. Of the *Colias*, *C. palaeno* Linn. was quite common and so was *C. nastes* Boisd., but the latter were mostly very worn. All the *Colias* had the habit of settling fairly often on the flowers of *Astragalus*. If it were not for this, they would be extremely difficult to catch. A single worn *Papilio machaon* Linn., a few *Pieris napi* Linn. and one *Lycaena phlaeas* Linn. were seen. Several *Euphydryas iduna* Dalm. were taken near the shores of Tornetrask but few were worth keeping. Only one *Clossiana frigga* Thunbg. and one *C. freija* Thunbg. were taken, both worn. A dark form of *C. euphrosyne* Linn. was not uncommon, a few still fresh. *Boloria sifonica* Gr. Grsh. was fresh and fairly common. Of the only two blues seen in Lapland *Lycaeidas idas* Linn. was abundant everywhere and fresh; *Vacciniina optilete* Knoch. was less common but widespread amongst its foodplant *Vaccinium uliginosum*.

The 9th July was dull until late afternoon when a walk south eastwards some two miles from the hotel produced two *Oeneis jutta* Huhn., *Erebia ligea* Linn., a few *C. palaeno* Linn. and *Hesperia comma* Linn.

On 10th July the westbound train was taken to Bjorkliden, and an ascent made of Mount Nuolja, returning to Abisko down the eastern slopes which lie inside the park. Several *Erebia ligea* Linn. were seen near Bjorkliden station. *E. pandrose* Bkh. (*lappona* Esp.) began at 1600 feet soon after leaving the tree line; it was frequent but not numerous right up to the top of the hill, 3000'. *B. sifonica* was flying on the lower slopes, being replaced by *B. pales* Schiff. from about 1600' upwards. *C. nastes*, though worn, was not uncommon.

On 11th July an expedition was made to the south facing slopes north of Lake Tornetrask. The lake was crossed in the hotel launch to the mouth of the Jebrentjikko, a mountain stream. The course of the stream was followed upwards through the birch woods to a plateau at about 2700', the breeding ground of long-tailed skuas, golden plover and Temminck's stint. On the way up a brood of willow grouse and a hen capercailzie were disturbed in the birch. A hut is maintained near the shore with bunks and cooking facilities. Near this *E. ligea* Linn. was flying freely. On the way up a fresh female *Palaeochrysopterus hippothoe* Linn. was taken, a fresh *O. jutta*, and two rather worn *O. noma* Thunbg.: a few *B. sifonica* were also in evidence. Unfortunately on reaching the high ground, the sun became very fitful and largely failed for the rest of the day. One fresh *Clossiana improba* Btlr. was taken and two missed on very bare moorland at about 2700'; this insect is small, dark, and flies fast, and it is almost impossible



to see it against its dark peaty background. The three seen were all fluttering on the ground before getting under way and though attempts were made to clap the net on them two of the three escaped and were seen no more. The night (there was, of course, no darkness) was spent at 2500' under shelter of a rock to avoid some light showers. Unfortunately cloud persisted next day and it was necessary to leave the high ground to catch the boat before the sun could break through. Beside *C. improba*, one other fritillary was seen, which may well have been *C. polaris* Boisd. It was most unfortunate that the weather did not behave better as no further opportunity occurred for visiting this reputedly entomologically very rich, and certainly entirely unspoiled area. A stay of several days in the hut with adequate food and mosquito dope is strongly recommended for any future visiting entomologists.

14th and 15th July were again dull and showery, and little was on the wing.

16th July looked better in the morning and the train was taken to Bjorkliden. This time, a track leading due south into the hills was taken with a view to returning to Abisko by train in the evening. The track led up a stream, the Rakkasjakk, to a corrie at about 2500' with higher hills and snow wreaths above it. On the way up *Pyrgus andromedae* Wallgr. was taken together with *B. pales* and *E. pandrose*. The day rapidly clouded over and by the time the 2500' line had been reached there was a light shower. When this was over, a gleam of sunshine appeared. Suddenly on a patch of moor dotted with flowers of *Dryas octopetala* and *Astragalus* spp., several *C. hecla* Lef. took wing; a female was netted, the clouds closed down, and no more were seen.

On 17th July the Rakkasjakk was revisited. This time *P. andromedae* and *B. pales* were again seen, and on reaching the flowery patch of the previous day seven male *C. hecla* were caught before the sun, as usual, disappeared!

18th July, the last day of my visit, really seemed more promising, and, in fact, the sun shone all day. Once again the Rakkasjakk was ascended from Bjorkliden, and this time *C. hecla* was flying in numbers. *P. andromedae*, *B. pales* and *E. pandrose* were again taken.

So ended a most interesting trip; it is a chancy part of the world to visit. The insects and flowers come on very quickly and are quickly over. The weather is uncertain, and when laying on the trip it is impossible to forecast how early or late the season may be. If one hits it off right, the rewards can be great. This year, to get the low ground species in good condition, it would have paid to arrive about 20th June. The high ground is, of course, later than the low, and species flying at 2500' and above—*C. hecla*, *C. polaris*, *C. improba*, *B. pales* and *E. pandrose*—are at least a fortnight later than species flying below the tree line. On average, probably about 1st/12th July is right for the low ground, 12th/24th July for the high.

Thanks to the Kiruna-Narvik iron ore railway the country is accessible, and the Swedish tourist organization provides all adequate comforts.

The following is a list of butterflies taken and identified:—

<i>Erebia ligea</i> Linn.	<i>Vacciniina optilete</i> Knoch.
<i>E. pandrose</i> Bkh.	<i>Lycaena phlaeus</i> Linn.
<i>Oeneis jutta</i> Hübn.	<i>Pulaeochrysophanus hippothoe</i>
<i>O. noma</i> Thnbg.	Hübn.
<i>Euphydryas iduna</i> Dalm.	<i>Pieris napi</i> Linn.
<i>Clossiana freija</i> Thnbg.	<i>Colias nastes</i> Boisd.
<i>C. frigga</i> Thnbg.	<i>C. palaeno</i> Linn.
<i>C. improba</i> Btlr.	<i>C. hecla</i> Lef.
<i>C. euphrosyne</i> Linn.	<i>Papilio machaon</i> Linn.
<i>Boloria sifonica</i> Gr. Grsh.	<i>Pyrgus centaureae</i> Rambr.
<i>B. pales</i> Schiff.	<i>P. andromedae</i> Wallgr.
<i>Lycaeides idas</i> Linn.	<i>Hesperia comma</i> Linn.

## New Synonymy and Notes on Some Species of the Genus *Zygaena* Fabricius, Lepidoptera, Zygaenidae

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The following notes have been compiled during the rearrangement of part of the *Zygaena* collection in the British Museum (Natural History).

### ***Zygaena sarpedon* Hübner.**

*Sphinx sarpedon* Hübner, 1790, Beitr. zur Geschichte der Schmett., 2: 85, pl. 1C.

*Sphinx sarpedon* Hübner, 1796, Europ. Schmett., 2, pl. 2, fig. 9.

*Sphinx sarpedon* Hübner, 1805, Europ. Schmett., 2: 83.

The species was first described and figured by Hübner in 1790, when he stated that there were specimens originating from Italy in Gerning's collection in Frankfurt. In 1796, Hübner figured the species again in *Sammlung europäischer Schmetterlinge* and gave a description in this work in 1805. In this second description Hübner stated that the species came from Languedoc. Burgeff (1926a) has examined the Gerning collection, now preserved in the Museum at Wiesbaden, and found four specimens of *sarpedon* which agree fairly well with Hübner's figures of 1790 and 1796. It is probable that Hübner described *sarpedon* from these specimens; if this is correct, then the four specimens may be considered the type material. It has been assumed by most authors that the locality "Italy" is erroneous, with which I agree. The fact that Hübner changed the locality to Languedoc in 1805 suggests that the quotation "Italy" may be incorrect.

Oberthür (1884) stated that the dominant form found at Montpellier agrees with the type.

Reiss (1958) gives an account similar to what I have written above and takes Montpellier, which lies in the province of Languedoc, as the type locality.

***Zygaena sarpedon* Hübn. (? ssp.) ab. *trimaculata* Esper.**

*Sphinx trimaculata* Esper, 1793, Die Schmett., Suppl. 2(2): 16, pl. 40, figs. 7, 8.

Esper described *trimaculata* from Nîmes, Languedoc. I have been unable to examine material from Nîmes, but in all probability the population from this locality is identical with the population from Montpellier. If this assumption is correct, *trimaculata* would be rarer than the normal form and should be treated as an aberration of the nominate race, viz., *sarpedon sarpedon* Hübn. Reiss (1930) and Burgeff (1926b) have treated *trimaculata* Esp. as a race.

***Zygaena sarpedon* Hübn. ssp. *carmencita* Oberthür.**

*Zygaena Carmencita* Oberthür, 1910, Léop. Comp., 4: 457.

In a catalogue (at present in manuscript) of the type material in the British Museum of the genus *Zygaena* F., I selected as the lectotype of *carmencita* Obthr. a specimen from Vernet-les-Bains. It was suggested to me that a better choice might have been a specimen from Vendée (Reiss, *in lit.*). However, a specimen was selected from Vernet-les-Bains as the latter is the locality first given by Oberthür. The lectotype selection has already been established by Bernardi & Viette (1959) who, in the same publication, described the race from Vendée as ssp. *pictonorum* Bernardi & Viette as it differs from ssp. *carmencita* Obthr. from Vernet-les-Bains.

***Zygaena sarpedon* Hübn. ssp. *carmencita* Obthr. ab. *vernetensis* Oberthür.**

*Zygaena Sarpedon* var. *Vernetensis* Oberthür, 1884, Etud. d'Ent., 8: 28.

Bernardi & Viette (1959) placed *carmencita* Obthr. as a synonym of *vernetensis* Obthr. as they considered the latter name to have subspecific status. It is obvious, however, that Oberthür implied in the text that he considered *vernetensis* an aberration even although he prefixed the name with the term "var." In the past the term "var." was often used indiscriminately to denote both aberrations and geographical races or subspecies. Further, Oberthür stated that *vernetensis* was found constantly but rarely with the normal form at Vernet-les-Bains and that it is analagous with *rhadamanthus* ab. *kiesenwetterii* H.-S. When describing *carmencita* in 1910, he obviously referred to the commoner form occurring at Vernet-les-Bains and considered it a race.

***Zygaena diaphana* Stdgr. ssp. *pimpinellae* Reiss.**

*Zygaena pimpinellae* Reiss, 1940, Stettin. ent. Ztg., 101(3): 4.

*Zygaena purpuralis* f. *pimpinellae* Guhn, 1932, Ent. Jb., 41: 89.

In 1910, Guhn discovered in great numbers at Rudersdorf, near Berlin, a species of the *purpuralis* group whose larvae were greyish-white and fed on *Pimpinella nigra* Wild. In 1932, the specimens were described by Guhn as *purpuralis* f. *pimpinellae* Guhn. In the same publication he described the larvae of what is known to be the true *purpuralis* as lemon yellow in colour and stated that its foodplant was *Thymus serpyllum* L.

In 1940, Reiss published a paper on *purpuralis* and *pimpinellae* in which he raised the latter to the status of species. As Guhn described *pimpinellae* as a form, the name has no nomenclatural status. Accord-

ing to the rules of nomenclature, Reiss must now be considered the author of *pimpinellae*. Reiss is the first worker to separate *pimpinellae* as a species distinct from *purpuralis*. In his paper, Reiss not only described and figured the genitalia but also gave descriptions and figures of *pimpinellae*, which he compared with the true subspecies of *purpuralis* occurring in the Berlin area.

In the series of *pimpinellae* from various localities that Reiss had before him, there were four of the original specimens collected by Guhn from Rudersdorf. Reiss declared these specimens as the "type population". These four specimens, from which a lectotype may be selected if necessary, should be considered the syntypes or type material of *pimpinellae* Reiss.

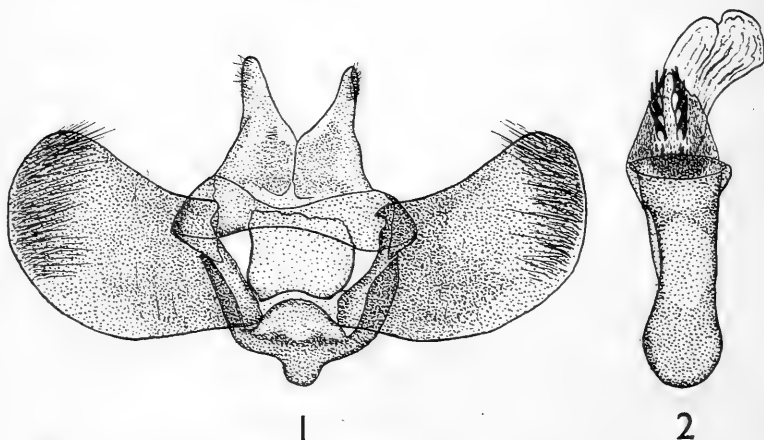
Reiss (1941) published a further account in which he wrote that *sareptensis* Rebel had been found to be conspecific with *pimpinellae*. As the name *sareptensis* has priority over *pimpinellae*, it was correctly treated as the species name, and *pimpinellae* was reduced to subspecific status.

More recently, *diaphana* Stdgr. was found to be conspecific with *sareptensis* and *pimpinellae* and, having been described earlier, was treated as the species name (Alberti, 1958; Tremewan, 1958). It was originally described by Staudinger as a race of *purpuralis* Brünn.

### ***Zygaena maroccana* Rothschild.**

*Zygaena carniolica maroccana* Rothschild, 1917, Novit. zool., **24**: 342.

The species was described from a single female found in a small collection of lepidoptera that Rothschild acquired from Staudinger and Bang-Haas. The specimen is labelled "Mogador Marokko". No further specimens have been taken from this locality and the data may be erroneous.



Male genitalia of *Zygaena maroccana* Roths. 1, genitalia; 2, aedeagus.

Until recently the male of *maroccana* was unknown. While sorting miscellaneous material in the Rothschild collection I found a slightly worn specimen which I immediately recognised as this species. The

specimen is a male and in superficial characters is similar to the female type. It differs, however, in having a narrow whitish ring only around spot 4 in the forewings, while in the female, spots 2, 3 and 4 are strongly ringed with white. The male genitalia are illustrated (figs 1, 2) and show *maroccana* Roths. to be a species distinct from *lucasi* Le Charles.

The specimen has the following data: "Tizi N'Tichka, Gt. Atlas, 12 km. W. of Telouet, 2450 m., 11.6.27 (E. Hartert)". *Zygaenidae* Slide No. 744.

The following are descriptions of two new aberrations of *Zygaena lonicerae* Scheven.

***Zygaena lonicerae* Scheven ssp. *major* Frey ab. *burrasi* ab. nov.**

♂, 34 mm. Coloration as in normal specimens of ssp. *major*, but spot 4 is absent while spots 1, 2, 3 and 5 are reduced in size.

Holotype ♂, "Fours. B.A 8.56 A.E.B", in A. E. Burras collection.

The holotype was taken at Fours, Basses-Alpes, by Mr. A. E. Burras, to whom I am indebted for the loan of the specimen.

***Zygaena lonicerae* Scheven ssp. *linnéi* Reiss ab. *hanseni* ab. nov.**

♂, 36 mm. Coloration as in normal specimens of ssp. *linnéi*, but spot 3 is absent while spots 1, 2, 4 and 5 are reduced in size.

Holotype ♂, "12.7. 1942. Skaering. Rich. H.", in R. Hansen collection.

The specimen is figured by Hoffmeyer (1948) and was captured at Skaering, north of Aarhus, Jutland.

My thanks are due to Mr. Richard Hansen for allowing me to describe the aberration. Acknowledgment is also due to Dr. Skat Hoffmeyer who made the necessary arrangements to send the specimen to me on loan.

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## Late Summer in North Italy

Major-General C. G. LIPSCOMB, D.S.O.

We had hoped to spend most of August this year once again in Yugoslavia, but what with one thing and another our plans for this venture fell through and in its place my wife and I were only able to take a short holiday in Northern Italy. This jaunt to the South in search of the sun in exchange for the everlasting cold and wet of this year's summer in Cologne has proved sufficiently interesting entomologically to give me the excuse of making this record of our brief expedition.

I returned from London on the morning of 25th August and by midday the car and trailer were packed and we were ready to start off down the autobahn. We had no particular firm plan but neither of us had ever seen the Italian lakes and if we didn't find anywhere we preferred en route we intended to make at least some of them our ultimate destination.

That night we stayed at a Gasthof near Ulm, having covered the best part of 300 miles. All the way down the countryside gave evidence of the sort of summer we have been having with hay uncut and sodden fields of corn beaten down flat by the wind and rain. It seemed doubtful whether much of it would ever be harvested.

At a lunch halt near Frankfurt I had seen, during a gleam of sunshine, a single *Araschnia levana* L., and several *Argynnis paphia* L.; otherwise butterflies were conspicuous by their absence and there was no evidence that there were any survivors of the big spring migration of *Colias hyale* L. that had been such a feature of the early summer months.

On the following day, 26th August, we continued our journey South making our way across country to Lindau at the Eastern end of Lake Constance and then on down through Liechtenstein and so into Switzerland. Liechtenstein is a most attractive little place and obviously very jealous of its independence. We noticed that its common frontier with Switzerland was heavily obstructed with concrete blocks and barbed wire but the nature of these obstacles gave no indication of who was afraid of being attacked by whom! Although we made several halts when the sun was at last showing itself we saw no butterflies of note and I began to wonder whether it was not altogether too late for an entomological expedition.

That night we stopped at Splügen in a most attractive valley a few miles North of the Italian border. It was latish when we got there and a walk before supper produced nothing more notable than a few *Lysandra coridon* Poda ♂♂ that had obviously wandered from wherever they had started their existence. The next morning was fine and sunny and we took the car up to the top of the valley following the course of the Hinterrhein until we left it to climb up the San Bernadino Pass. We counted no less than twenty-seven hairpin bends before we reached the top with its attractive little lake at about 6,200 ft. We spent some time exploring the surrounding countryside where the soil was very peaty but were only able to discover a single fresh specimen of *Erebia melampas* Fussel and several rather worn *Parnassus apollo* L. flying in a desultory fashion along the banks of a stream. We retraced our steps to lower ground to eat our lunch and were rewarded by finding *Erebia*

*aethiops* Esp., *Erebia tyndurus* Esp. and *Hesperia comma* L. in some numbers and a single very fresh *Synchlœa callidice* Esp. A few rather worn *Argynnis aglaia* L. were also in evidence as was *Colias phicomone* Esp. Later we returned to Splügen and I tried a likely looking spot on the edge of a wood on the hillside opposite the village. Here I discovered a small colony of *Clossiana titania* Hbn. of which the ♀♀ were still very fresh. They were flying over rough ground that had not received the attention of the haymaker's scythe and was a mass of flowering thistles and that magnificent tall gentian *Gentiana asclepiadea*.

The next day, Sunday, 28th August, we set off again, this time over the Splügen Pass which leads directly to the Italian border and then on to Lake Como. We were encouraged to push on South as it was a dull and unpleasant morning and although the country leading up to the pass, which is at about 7,000 ft., was obviously a good collecting ground, the weather made it a waste of time to stop and we motored on down a most picturesque road with many hairpin bends and tunnels, locally called galleria, till eventually we reached Lake Como. We had had thoughts of stopping and camping here but we quickly abandoned this idea when we saw the crowded state of the camp sites and the general flood of humanity that occupied all approachable parts of the lake shore. We examined the map and decided to put our money on Lake Garda and accordingly, after a quick bathe and picnic lunch, we took the road to this thirty mile long stretch of water lying with its head in the Alpine foothills and its southern parts in the Plain of Lombardy.

Once we left Lake Como the country became flat and uninteresting, but it was only now that I saw the first *Colias croceus* Fourc. and, with two others later, the only specimens seen on this trip. Our route took us through Bergamo and Brescia, part of the way on the Autostrada, for which one has to pay a toll, and at one point we got mixed up with a bicycle race. Racing cyclists apparently can occupy the whole road, and for the sake of safety we pulled up while a horde of sweating cyclists, heads down and pedalling hard, accompanied by excitable hangers-on on mopeds waving flags, and the whole preceded by a very vociferous loudspeaker van, flowed past us!

Towards evening, and by now rather hot and tired, we reached the southern end of the lake which is flat and uninteresting, but the scenery improved quickly as we motored along the western side where the hills come down very abruptly into the water. Much of the road is through tunnels and the prospect of finding suitable camp sites and fruitful collecting grounds looked slight. However all was well in the end and we came to rest in a delightful and largely unoccupied camp in a vineyard on the outskirts of Torbole at the extreme north end of the lake. We only just had time to get our tent up and cook supper before the light went. When finally we decided to pitch our tent where we did, I had been guided to some extent by discovering a large rough field full of wild flowers almost next door to the site. I felt sure that representatives of most of the local butterflies would be found here in the morning. However, the best laid plans are apt to go astray as I became increasingly aware, as I lay three parts asleep in my sleeping bag next morning, of an irritating sound that I first thought was somebody fooling about with a motor-bicycle engine. The noise per-

sisted and I soon realised that it came from a mechanical mower hard at work in my pet field, and by the time the sun was up not a single blade of grass remained upright! We were compensated for this setback by the fact that it was a lovely day and we decided to make a short expedition up a side road on the west side of the lake to another small lake at Molina di Ledro. This road wound its tortuous way up an almost verticle hillside and gave one wonderful views of Lake Garda, itself looking blue and cool in its mountain setting. We halted at a convenient layby to take photographs and on a nearby rockface my wife pointed out a very fresh *Polygonia egea* Cr. sunning itself. Some nearby clumps of hempagrimony flowers were favoured by several Jersey Tigers, *Callimorpha quadripunctaria*, and indeed wherever this flower occurred one was almost certain to find one of these fine Tigers sitting on it; all I saw had red as opposed to yellow hindwings. Once over the top a few more miles brought us to the lake which was absolutely clear and ringed with woods and meadows, a really lovely place and I was quick to spot that much of the grass that flanked it was as yet uncut, and butterflies were in profusion. All the Argynnis, including *A. niobe* L., were there in varying degrees of freshness and the large dark butterfly *Minois dryas* Scop. was very common and the ♀♀ with their large blue eye spots were particularly fine.

*Pyronia tithonus* L. was abundant and I was lucky to capture a fine cream coloured ♀ which showed up most conspicuously as it flew with its darker sisters. The distribution of this butterfly in Central Europe is interesting. It is such a common feature of our countryside at home but throughout Germany and the Northern part of the Alps it is very scarce and would seem to be common only in the southern alpine valleys. A large and fresh *Iphiclides podalirius* L. was netted as it sat on a thistle, the only specimen of this lovely swallowtail that I saw on this trip. The white *Pieris manni* Mayer was common. It is very similar to *P. rapae* but may be distinguished by the paler underside of the hindwings and the increase in the black markings at the wing tips. Other interesting butterflies seen were *Erebia aethiops* Esp., *Lysandra coridon* L. still fresh and in fair numbers but with no sign of variation, *Lysandra bellargus* L. (only a few ♂♂), *Hesperia comma* L., *Pyrgus seriatalae* Rbt., *Plebejus aegon* Schiff. still fresh, *Heodes tityrus* of the dark *subalpina* subspecies, *Lycalides idas* L. ssp. *opalenta*, *Aricia agestis* Schiff., *Colias australis* L. and *Colmonympha arcania* L. At midday I rejoined my wife for a bathe and picnic before we explored further down this most attractive road as far as Lake d'Idro. We stopped several times at likely looking spots, but I was unable to add to my list before we returned to our camp and a well-earned supper with a bottle of wine at a local lakeside "albergo".

The next day, August 30th, was equally fine and warm, and we decided, as we examined the map over a leisurely breakfast, to see what were the possibilities of the eastern side of Lake Garda.

It quickly became apparent that this was by far the better of the two sides from every point of view as the hills sloped less steeply to the water's edge and they and the shore line were almost always accessible to the walker and bather respectively. It proved to be a lovely drive with much of the road flanked by various flowering shrubs, including oleander bushes of every shade of colour from white to dark red and with the hillsides themselves clothed in olive trees. One colourful village



succeeded another and we eventually parked our car near Malcesine where the gin-clear waters of the lake were particularly inviting for a dip. While my wife sunbathed on the beach I made my way with my net up into the olive groves. Here most of the butterflies I had noted the previous day were present but now it was the turn for *L. bellargus* to be in numbers, while *L. coridon* was all but absent. The autumn brood of *Leptidea sinapis* L. was just coming out as also was that of *Pararge aegeria* L. This latter butterfly was far from common and it took me some time to collect a series and all proved to be of the form *egerides*. *Hipparchia statilinus* Hufn., with which I first became acquainted in Yugoslavia last summer, was generally to be found on patches of open rocky ground and several specimens of the large and conspicuously-marked *Hipparchia fagi* Scap., another of my Yugoslavian acquaintances, were noted sitting about on the trunks of olive trees, where their underside markings blended particularly well with the bark. In the afternoon we continued down the shore as far as Garda where the hills begin to desert the lake. At several stops I searched the roadside oleander bushes hopefully but without success for larvae of *Daphnis nerii*. They had been such a feature of these bushes in Egypt in the days when we had soldiers there and it would have been fun to have found one again.

August 31st was another lovely day and we decided as a start to explore the road which leads eastwards from Torbole over the mountains to Mori in the Adige Valley. This, too, proved a most attractive route and I was interested to find a colony of *Melitaea didyma* Esp. just emerging on an open part of the hillside. As always, individual specimens varied considerably, some being almost obsolete and others with extensive black markings. On our return we stopped to take photographs again from a view point overlooking the lake and I noticed several *Papilio machaon* L. quartering the steep hillside below us.

We returned to picnic where we had bathed the previous day and later I explored a gully choked with undergrowth that ran up into the mountainside behind our bathing beach. Not unnaturally, this proved to be the main headquarters of *P. aegeria* and I was delighted to find it was also the haunt of a small colony of the lovely butterfly *Limenitis anonyina* Lewis. In true White Admiral style they either sat about on the leaves and flower heads with expanded wings or sailed from one vantage point to another.

September 1st saw us packed up once more and on our way north heading for Cologne. It was sad to leave such a lovely place and one which I can unreservedly recommend to other entomologists who have not yet visited this part of Europe. Our route home took us through Merano, and just north of the town we halted for a picnic lunch up an attractive side valley. I noticed several dark-looking "blues" on the wing and when one was eventually captured it proved to be the second brood form of *Scolitantides orion* Pall. which is considerably larger and with far less blue on it than the specimens which appear in the spring and with which I had only previously been familiar. *Dica maera* L. was also present in the same locality.

A few days later we were back in Cologne arriving in pouring rain and with the temperature in the fifties, a state of affairs that had existed, we gathered, ever since we had left!

Cologne. 13.9.60.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

**Margaronia unionalis** Hübn. At dawn on September 10th I went to attend my m.v. trap to forestall the birds that collect soon after day-break. For once I did not take a net with me, and when I saw a male *unionalis* sitting on the concrete near the trap, I was unable to box it as it darted off, though just before it took off it lifted its wings sufficiently to expose the male tuft. It flew off happily in the half-light in a series of skipping curves that were very pretty to watch, and eventually vanished into a huge rose bush some twenty yards down the garden. As I have a long bred series I was, on the whole, not sorry that I had not brought the net, as the natural flight was previously unknown to me.

This brings me to the second point: why is *unionalis* so comparatively common now, locally at least as common as *Nycterosea obstipata* Fab.? When Mr. Dennis Smith took one at Leigh-on-Sea in August 1947, there was certainly no previous local record, and I believe no Essex one, though Mr. Dewick may have taken it before this at Bradwell. There were no more here until 1953, but since then 24 have occurred, including another on September 16th at Hockley by Mr. D. More. By no means all of these have been at m.v. light although all the five in my garden have been thus attracted. Three have been found on shop windows, one by a schoolboy, on a fence, and Mr. Smith's flew into his bathroom. In the past the district was the residence of such collectors as Whittle and Conquest, and a favourite collecting ground for numerous others from Samuel Stevens and Tutt onwards, and I myself have lived here since 1932, so I am driven to the conclusion that *unionalis* is much more common than in the past.

**Crambus contaminellus** Hübn. Barrett (10: 110) describes the female of this insect as "similar or darker in colour". I have seen a good number of the moth from Deal, Parkstone, the Isle of Wight and Tresco, and in every case except one the female has been paler than any of my males, of a very light whitish buff, and even my one dark one from Deal is no darker than an average male. I was particularly struck by this on Tresco, where the males are usually liver-coloured, but the females are as light as a Deal or Parkstone one. There are a few of the sandy coloured males on Tresco, but on the other hand the black ab. *sticheli* Constantini also occurs; this seems rather curious on these unpolluted open sandhills where insects like *Agrotis ripae* Hübn. are glistening white.

**Gymnancyla canella** Hübn. Mr. D. More, who has been collecting at Hunstanton, has brought to me a few shoots of *Salsola kali* with the characteristic boring and web of the larva of this moth. So far as I can ascertain this represents an extension in the known range of the insect, which has hitherto not been found north of Suffolk. As it has occurred as far north and west as Hunstanton, I think it almost certain it will be found on the Lincolnshire coast of the Wash.

**Capua grotiana** Fab. Although Mr. L. T. Ford (*Guide to Smaller British Lepidoptera*, 49) gives *rubus* as one of the food plants of this moth I have always associated it exclusively with woods, and more especially old woods such as Blean. I was, therefore, rather surprised to find it common on the sandhills near Old Grimsby, Tresco, amongst marram, mixed herbage, and bramble clumps. I set a couple for the locality, but they are exactly the same as my Kentish woodland ones.

## A Highland Holiday

By R. G. CHATELAIN and B. F. SKINNER

So many excellent articles have been written about visits to Aviemore that we did not intend to swell their number but, in view of the help we had from such notes, we have decided after all to submit our own in the hope that they may prove of interest to others who have yet to make the journey.

At 4 o'clock on the morning of 29th July, the old Morris staggered northwards with a full load of generators and entomological impedimenta. The first night was spent at the Station Hotel, Stirling, and our destination was finally reached at lunchtime the following day.

Within an hour of arrival we had taken a short series of *Erebia aethiops* Esp., an insect which we subsequently found commonly all over the district. After tea and a short reconnaissance, we decided to spend our first night on the heather at Coylumbridge where we arrived at dusk with an unlimited supply of optimism and pillboxes. An auspicious start was made when B.S. netted *Plusia interrogationis* L. over the heather after which the moths came to the lamp in numbers. Nothing spectacular was taken, but nevertheless we returned home satisfied with a small bag of *Triphaena sobrina* Bdv., *Diarsia dahlia* Hübn., *Apamea furva* Schiff., *Lygris populata* L., etc., and found a somewhat bedraggled female *Plusia bractea* Schiff. awaiting us in the trap with *Amathes depuncta* L. for good measure. After some reluctance, *bractea* consented to yield a supply of eggs.

The following day, 31st July, provided the only prolonged spell of sunshine we were to enjoy and the opportunity was taken to net a series of *Carsia paludata* Thnbg. A cold night prevented anything of note turning up at light but the trap contained two *A. furva*.

On Monday we took a few more *aethiops* but the weather was bad and we saw little else on the wing. In the afternoon the weather changed (from bad to very bad) and it was through a thunderstorm that we motored to Kincaig to visit Dr. C. B. Williams whose trap records were of the greatest interest. The highlight of the day, however, was the excellent tea provided by Mrs. Williams. That night was spent in the Craiggellachie Reserve but apart from a couple of *Parastichtis suspecta* Hübn. at sugar little was noted, except a thick mist and a twinge in the lumbar region. A further proof that moths often show more sense than their collectors. The situation was somewhat better at the trap which contained three *depuncta* and one *bractea*.

On Tuesday, 2nd August, the sun showed itself during the morning and we were able to find a few *Coenonympha tullia* Müll. still on the wing at Glenmore. After the usual pilgrimage to the Ospreys in the afternoon, B.S. found four larvae of *Apatele menyanthidis* View. feeding on a willow bush in the middle of Loch Garten. Damp but not despondent, we returned to Alt na Craig. That evening, in pouring rain, we drove to Dalwhinnie and, as soon as the generators were going, retired to the car to listen to the water bouncing off the roof. However, quick dashes to the sheets provided three *Apamea exulis* Lef. (*assimilis*) and a number of *Stilbia anomala* Haw. The trap yielded two *depuncta* and one *Agrotis vestigialis* Hufn.

Wednesday morning had to be devoted to the task of setting our captures but after lunch we found *C. tullia* quite commonly at Coylum-

bridge, although most were in a worn condition. We had hoped to take *Amathes alpicola* Zett. in its well-known locality but being unable to obtain the key to the gates, we repaired that evening with A. E. Gardner to a likely spot we had discovered in the Cairngorms. *Alpicola* did not put in an appearance but we were very soon busy boxing *assimilis*, of which more than twenty visited the lamps, accompanied by a horde of *P. interrogationis*, *Entephria caesiata* Schiff., and some six *Eurois occulta* L. Descending through the clouds we hit the pillow at 4.30 the next morning and it was only thanks to Eric Gardner that we did not miss breakfast. In the trap were *depuncta*, *bractea* and *festucae*.

Thursday was mainly spent in setting, some of which was done in the lounge where spectators were nearly as numerous as *assimilis* had been the previous night. That evening we visited a local mixed wood where fifty species were logged, including the first two *Enargia paleacea* Esp. of the week, several *bractea*, *dahlii*, *occulta* and three "ears", subsequently identified as being *Hydraecia oculea* L. (2) and *H. paludis* Tutt (1). We were also pleased to take a few of the beautiful red form of *Amathes castanea* Esp. On our return to Aviemore, we found the usual *depuncta* patiently awaiting us but a light-coloured moth fluttering outside the trap was somewhat more interesting. It was *Heliothis scutosa* Schiff. and the first record for the area!

This really marked the end of operations as the next day was taken up with setting and the night in Craigellachie produced little other than a few *suspecta*, *occulta*, *Calostygia olivata* Schiff., and one *Apamea furva* Schiff. at sugar and at light one each of *D. dahlii*, *Ammogrotis lucerneae* L. and *H. oculea*.

We left Aviemore on the Saturday morning determined to return as soon as possible. In spite of the weather and our disappointment at being slightly too early to see *Lithomoia solidaginis* Hüb. n.; *Antitype chi* L. and one or two other local celebrities, we felt that the week's bag had been pretty good. After a comfortable night at Penrith, we headed towards the A.1 which we left later in the afternoon to pay a flying visit to the fen country in a search for larvae of *Perizoma sagittata* Fab. We got six small ones.

This note would not be complete without mention of the excellent standard of comfort provided by Mr. and Mrs. Le Masurier whose cuisine and understanding of the foibles of entomologists did so much to make the holiday a memorable one.

## Adjuncts to Sugaring

Sugaring on the outskirts of a wood is always interesting. One would think that there was safety for moths inside a wood, safety from bats and goatsuckers; yet, in my experience at least, there are invariably more moths a-wing outside a wood than within it. Bats, from pipistrelle to noctule, fly to and fro along the outskirts of woods night after night and presumably they know where to find their food. They seem to have regular beats and once when I lay hidden among bracken in a ditch I watched a noctule flying along the south frontage of a wood as regularly as a sentry at Buckingham Palace. When he came directly over my head he turned, rather sharply, and went back to the far corner of the wood, about two hundred yards away, and there I could just see him, against the glow of the western sky, turn again and fly

back to me. But he made divagations whenever a noctuid hove in sight and of course no sentry at Buckingham Palace would ever deviate from his beat even if offered a toothsome sweetmeat.

One night when I was sugaring the trees along the base of a wooded hill, young oak trees fronting a narrow grassy path, I became aware of a slight rustling among the dead leaves on the path behind me. I looked round, expecting some yokel or the village policeman, but no one was there. The rustling stopped when I stopped to inspect a sugared tree, then continued as I moved on. It was rather mysterious. It might have emanated from a grass snake; but grass snakes do not usually trail entomologists. At last, when I had finished my inspection of a trunk, I turned round sharply and faced the way I had come, then shone my light on the path. Two little eyes, bright as rubies, looked up at me. It was a porpentine, or hedgehog if you will, and he—or she—stood there and looked up at my light (which was only a bicycle lamp) and awaited my pleasure. Plainly a companionable and well-behaved porpentine. It may have been lonely or it may have been merely inquisitive, wondering what was this large animal that had taken to perambulating its nightly beat, perhaps eating the very beetles and worms that belonged, by right of seizin, to it.

I bid it “good evening”, and went on with my inspection of sugared trees, porpentine following me to the end of my beat, when it walked up into the wood, slowly and in a rather dignified way. Next evening I sugared that beat again, and this time I carried a saucer and a bottle of milk with me. But apparently the porpentine was satisfied that I boded no ill to it nor to its foodstuffs, and it did not appear again. Next morning the saucer of milk was still full, with two drowned earwigs in it.

This wooded hill formed a rampart of the river Severn and in hot summer weather the valley was a favourite haunt of thunderstorms. One night when heavy clouds were forming up, the lower atmosphere being oppressively hot and still, I thought I would sugar a beat close to the house, just to see what effect a storm would have on the moths. So out I went at dusk with my sugar-pot, and as Geometers were already on the wing I sugared a longer beat than I had intended. By the time I regained the house gusts were blowing, seemingly from all quarters, strong gusts too, and there was every promise of a young typhoon. “Surely you’re not going out again?” asked someone. But I like watching storms, so out, presently, I went.

As darkness fell the gathering storm became frightening. It was an unholy night. The wind was all a-bluster, rampaging about the landscape and blowing trees in all directions. Streaks of red and yellow light flashed in the sky, momentarily illumining clouds black as a crow. Lightning ran sideways along the horizon. A witch on a broomstick screeching across the sky like a jet-propelled ‘plane would not have surprised me in the least. I thought of the witch’s invocation to Hecate in the *Masque of Queens*:—

“The owl is abroad, the bat, and the toad,  
And so is the cat-a-mountain,  
The ant and the mole sit both in a hole,  
And frog peeps out o’ the fountain;  
The dogs they do bay, and the timbrels play,  
The spindle is now a-turning;

The moon it is red, and the stars are fled,  
But all the sky is a-burning! "

It was just such a night as Ben Jonson must have had in mind when he penned those words. But neither owl nor bat could have been abroad on such a night as this: it was fit only for witches.

Presently rain began to fall; but the Wind, accepting as a fellow-spirit one who dared to be out of doors in the hubbub, screamed suddenly and blew the drops to smithers. I took off my hat to Wind (I thought this was as well: if I hadn't he might have removed it for me) and stood bareheaded to watch his progress. Up the hillside he roared, then vanished as suddenly as he had come. It was a little startling and I held my breath, for somehow the lull seemed to forbode some mighty event: it was as though Wind had stood aside to make way for a more Cyclopiian force. A tension that I could sense, could feel, was gathering about me from all the corners of the sky. I began to get excited. "Thor!" I shouted.

And then it came. There was a flash which blinded me momentarily as though an arc-light had been lit before my face, and with it came a crash as of a field-gun fired close at hand. My scalp tingled and for a moment I was back at a place called Ablain St Nazaire, where a silly young gunner sub, firing over the Ridge, had pooped off a round while I was sitting in front of his gun and nearly blew my head off with noise. A tree in the wood rustled queerly, shaking all its leaves together at once, an eerie sound, and presently came the acrid scent of smoke . . . Wind murmured again; then I heard him rushing away across the fields. The wood had paid toll, and Thor, brandishing his thunderbolts, went off in search of other prey.

Wind having departed in attendance on Thor the rain was free to do what it liked. It plunged headlong out of the clouds, and the clouds being low there was scarcely time for the water to break up into drops. In five seconds it had flattened every plant in the flowerbeds, covered them with mud, and converted the beds into pools. The low oak tree to whose trunk I had moulded myself broke the force of the downpour but converged the drops into streams which poured upon me. When at last I strode across the lawn to the house I might have emerged from a plunge in the river.

Presently the light from my bedroom window showed steam rising from the baked earth and when I came downstairs the air was still close though cooler. I pulled on rubber boots and went out to inspect my sugghared trees. One *pronuba* on fifty trees—and he, of course, intoxicated. I left him to it and went back to the house. At midnight I went out again. Same *pronuba* . . . I mixed myself a grog and went to bed.

The plants in the flowerbeds took two days to recover. Next morning they were sadly out of trim, mud-bespattered and leaning tipsily at every kind of angle. I fetched a watering-can with a fine rose, and when the coating of soil had been washed from their leaves they looked a little better, though still drunkenly flabby. During the afternoon most of them straightened up and next day they were as jaunty as ever. Thor and his vagaries are incidents which ruffle the placid stream of life: they come and go, and Nature has adapted her children to deal with them. The occasional sacrifice is not worth considering.

O. M. H.

# Notes and Observations

**HOMOEOSOMA SINUELLA FABR. IN DERBYSHIRE.**—My two eldest sons, Kyle and Robin, aged nine and six years respectively, are keen entomologists and frequently bring me insects caught on a piece of grass and nettle-covered waste land, only 35 yards square, between houses on our suburban avenue. The moths are usually the commoner Crambids, China-marks and Plumes but on 22nd June 1960, Robin brought me a species new to Derbyshire, namely *Homoeosoma sinuella* Fabr. Mr. S. Wakely has seen the specimen and confirms its identity. B. P. Beirne (1954) repeats E. Meyrick's (1895) statement that this local species is not found north of Norfolk and, as my specimen was obtained seven miles south of Scolt Head (the northernmost part of that county), its range cannot be said to have been extended by this new inland locality.—DEREK C. HULME, 1 Melton Avenue, Littleover, Derby. 12.ix.60.

**EUROIS OCCULTA L. AND SECOND BROOD OF DIARSIA FESTIVA SCHIFF. AT MORECAMBE.**—On 8th August a specimen of the typical grey form of *Eurois occulta* L. was found in my garden m.v. trap here. At this time, and for some days previously, the wind direction had been persistently north-easterly, thus facilitating the suspected migration of this form from Scandinavia.

The occurrence of an example of a second brood of *Diarsia festiva* Schiff. in the trap on 28th August is also worth recording. It was a small rather dark specimen resembling the form *confusa* Tr. though in this area the typical form is usual.—C. J. GOODALL, 2 Derwent Avenue, Morecambe, Lancs. 29.viii.1960.

**EPIBLEMA FOENELLA L. AT MORECAMBE.**—An example of this tortricid moth was found in my garden m.v. trap here on 21st July 1959. I am indebted to Dr. N. Birkett for the identification. Apparently the only previous records of this species in the north of England were (1) Ellis's *List for Lancashire and Cheshire*, "once only at Southport in 1903 (W.G.C.)" and (2) Michaelis in *Trans. Lancs. and Cheshire Ent. Soc.*, 1953/4, "Formby, 1950, G. de C. Fraser".—C. J. GOODALL, 2 Derwent Avenue, Morecambe, Lancs. 29.viii.1960.

**LATE SUMMER COLLECTING IN SOUTHERN ENGLAND.**—Recently I underwent a period of grass widowerhood and being unable to face the results of my cooking any longer, decided to spend a long week-end in the West Country.

Accordingly, the evening of Thursday, 8th September, found me on the edge of some cliffs in North Devon where the Sea Thrift was growing plentifully. Within ten minutes of lighting up a grey moth plopped on the sheet and by 11 p.m. seven *Antitype xanthomista* Hübn. had dropped in. Other visitors to the lamp are not worthy of mention, neither are the moths seen the next evening at a spot some half a mile inland from the coast.

On Saturday, 10th September, I motored to Fowey, where my first call was on Col. Rossel, whose local knowledge was invaluable. At his suggestion, operations that night were on the shore near Fowey.

Some difficulty was encountered in reaching the locality on wheels but a good gathering of moths rewarded my efforts. The commonest visitor was *Plusia gamma* L. of which hundreds were seen but the most noteworthy insects were four *Leucania l-album* L. and seven *L. vitellina* Hübner.

The next night was my last and Col. Rossel and I visited Carlyon Bay. Conditions seemed ideal but although about 25 species were noted, only a few *l-album* and *Agrotis vestigialis* Hufn. were taken.

On 17th September, Bernard Skinner and I visited the Romney Marshes on the trail of *Hydraecia hucherardi* Mab. We only took four but one male *Herse convolvuli* L. turned up.—R. G. CHATELAIN, 65 East Drive, Orpington.

**LOYOTAENIODES FORMOSANA FROL. IN WILTSHIRE.**—Earlier this year I took a specimen of *Loyotaeniodes formosana* Frol., and Mr. Wakely suggested to me that a record of this should be published. The moth, which is somewhat worn, was taken at m.v. light on the night of 24th July 1960 in my garden at Trowbridge, Wilts. This is somewhat outside the area so far recorded for this species, I believe.—J. R. BELL, 42 Victoria Road, Trowbridge, Wilts. 18.ix.1960.

**VOLUCELLA ZONARIA PODA IN BOURNEMOUTH.**—On 18th July one of my neighbours brought to me for identification the corpse of an insect that she had found in her house. It was *Volucella zonaria* Poda. She told me that a fortnight earlier she had caught another specimen of this dipteran in her house, and that a lady visitor had assured her that it was a hornet and insisted on drowning it. I think I convinced my neighbour that it was an interesting insect, perfectly harmless, and on no account to be destroyed. Since I first saw *zonaria* in my garden in 1950 it has appeared in small numbers every year except last year, which was strange, considering what a fine summer it was. This year I saw my first on 2nd August, when two were noted on *Buddleia*. On 8th August I saw one *V. zonaria* and also one *V. pellucens* on hemp agrimony (*Eupatorium cannabinum*), and on the next day I saw two *zonaria* on the same plant. I think they were a pair, as one was perceptibly larger than the other. On 12th August, after three very wet days, I saw these two again on hemp agrimony, and on the same plant a *Cetonia aurata*, a beetle which I had not seen for two or three years. Other appearances of *zonaria* were on 16th August (one), 17th and 18th (one and one *pellucens*), 19th (one), all on hemp agrimony. One of them alighted on phlox, but departed hurriedly.—H. SYMES, 52 Lowther Road, Bournemouth. 24.viii.60.

**H. CONVOLVULI L. ON ISLE OF CANNA.**—I found a specimen of the *Convolvulus* Hawk moth in my m.v. trap this morning (12/9/60). The night had been mild with a strong s.w. breeze. The specimen was in good condition. There were also specimens of *Peridroma porphyrea* Schiff. (*saucia*) and *P. gamma* L. in the trap. Moths of many kinds have been very plentiful here this autumn, as has *Vanessa atalanta* L., which bred on the island in numbers during the summer. *Eurois occulta* L. was taken here for the first time last month.—J. L. CAMPBELL, Isle of Canna, Scotland. 12.ix.1960.



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## EXCHANGES AND WANTS

*For Sale.*—Entomological Cabinets, all sizes, due to change over to unit system. Details on application. Easy payments if required. *R. W. Watson, "Porcorum", Sandy Down, Boldre, Near Lymington, Hants.*

*For Exchange.*—"Field Lepidopterist", Tutt., 3 Vols. "British Moths", Morris, 4 Vols., 1891. "Tineina", Stainton, 1854. "British Tortrices", Wilkinson, 1859. Also wanted: Storeboxes, 13 × 9 or 14 × 10. *Cartwright Timms, 524 Moseley Road, Birmingham, 12.*

*For Sale.*—Compact Portable Generator to run one or two mercury-vapour lamps. Offers. Ancillary equipment also available if required. *A. A. Lisney, Dune Gate, Clarence Road, Dorchester, Dorset.*

*Wanted.*—15 to 20 large-drawer Mahogany Cabinet. Brady or Gurney preferred. *H. N. Moon, "Budleigh", 319 Coniscliffe Road, Darlington.*

*For Sale.*—Early run of Entomologist's Record. Vols. 1-37, 1890-1925. Bound in 19 volumes in half calf. All offers considered. *M. J. Cotton, B.Sc., 27 Hatherley Street, Cheltenham, Glos.*

*Orthoptera.*—Crickets of the subfamily Gryllinae (except domestic Species) and grasshoppers of the subfamily Pyrgomorphinae from all parts of the World required in any quantity for research work in morphology, taxonomy, cytology, and experimental biology; dry or fluid preserved or living. Please contact *D. K. Kevan and R. S. Bigelow, Department of Entomology, McGill University, Macdonald College, Quebec, Canada.*

*For Sale.*—10-Drawer Cabinet, Beating Tray, Breeding Cages, Setting Boards, Collecting Boxes, etc.—*Telephone Mill Hill 3488. John G. Dunbar.*

*Wanted.*—A Ten-drawer Cabinet (second-hand) in good condition. Height not to exceed 30 inches. Details and price to *Col. H. J. Rossel, The Old School House, Bodinnick, Lanteglos, by Fowey, Cornwall.*

*Wanted.*—Records of *Lathridius* spp. (Coleoptera Lathridiidae) especially *L. bifasciatus* Reitter, with locality, date, and if possible details of habitat. *E. Lewis, 8 Parry Road, London, S.E.25.*

*Wanted.*—Cabinet(s)—about 40 drawers; good quality.—*Lt. Col. W. B. L. Manley, Greenways, Shoreham Road, Otford, Kent. Telephone Otford 578.*

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## RECORDS OF THE BRITISH ZYGAENIDAE

I have in preparation a paper on the distribution of the species of *Zygaena* and *Procris* found in the British Isles, with maps showing the geographical range of each species in these islands. I would welcome authentic records, especially from Ireland, Scotland, Wales and South-West England. Records of *trifolii* (both the early May-June subspecies and the July-August subspecies) and *loniceræ* would be of special interest, including any from southern England, as here the range of the two species overlaps. As these species, *trifolii* and *loniceræ*, are sometimes difficult to separate, I shall be pleased to determine any doubtful specimens, which should be sent to me by 31st December, 1960.

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W. G. TREMEWAN,

Dept. of Entomology, British Museum (Nat. Hist.), Cromwell Road, London, S.W.7.



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# THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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Insects

# THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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## Among the Larvae

By H. SYMES

The season for me opened with two disappointments. During the autumn of 1959 I had received eggs of two interesting species. Captain R. A. Jackson gave me about two dozen *Oria musculosa* Hubn., and Mr. Barry Goater eight *Lithophane leautieri* Boisd. I sowed some winter wheat so that food would be ready for the former when they hatched. They did so during the middle of March. The young larvae are very minute, and I put them in a metal box with a shoot of wheat. Hatching took place over several days, during which I put two or three fresh wheat shoots in the box. One larva must have started feeding, as I noticed that it grew perceptibly. When all except one had hatched, I transferred the wheat shoots with (I hoped) the larvae, which had disappeared from sight, to a pot of well grown wheat. I never saw any of them again. Captain Jackson informs me that he had the same experience with his. Of the *leautieri* eggs, only five hatched, in the third week of April: they were supplied with male flowers of *Cupressus macrocarpa* but all except one died without starting to feed. This one survived until 3rd May, by which time it had grown appreciably.

Towards the end of May, I spent three days at Whiteparish with Brigadier Warry, beating and searching for larvae. We were disappointed not to find any *Apatura iris* L., but larvae in general were more plentiful than in the last two years, especially *Pseudoips bicolorana* Fuessl. and *Brachyonycha sphinx* Hufn. Several *Thecla quercus* L., a species we did not see in 1959, fell into the tray, and *Episema caeruleocephala* L. were locally abundant on blackthorn, but about 50% had been "stung". On the other hand, we did not see any *Trichiura crataegi* L. or *Orthosia miniosa* Schiff. I found one *Bombycia viminalis* Fab. inside the drawn-together terminal leaves of a willow twig. The moth emerged on 24th June.

At the end of May, Brigadier Warry gave me a dozen larvae of *Xylomyges conspicillaris* L. They were extremely healthy and gave none of the trouble that I had experienced when rearing this species in 1955 (*Ent. Rec.*, 67: 251). Their diet consisted entirely of *Lotus corniculatus*, they fed up rapidly, there were no deaths, and all except one, which got lost, had gone down before 24th June. In 1955 none were full fed until well into July.

I have been breeding *Orgyia recens* Hubn. ever since Mr. E. W. Smith sent me some larvae from Doncaster in 1958. In the south of England this species is often double brooded. In June this year, despite the in-breeding, four remarkably fine males emerged, of which the largest had a wing span of 37 mm., compared with two wild ones that were attracted to females in Pamber Forest in 1934 and 1938, each of which measured 32 mm. This is an average size for specimens of the first brood that I have bred: those of the second brood are somewhat smaller. I was also rearing *O. antiqua* L., but by the time these began to emerge, there was only one fresh *recens* female remaining. I saw an *antiqua* male attempting to pair with her, but apparently without success, as the eggs that she laid did not hatch.

On 21st June, I visited Morden Heath, where I found the males of *Diacrisia sannio* L. unusually plentiful in the area among young pine trees where I had seen them last year. I saw only one female, which I took. On the way home, she laid some eggs in the box, and on the next day, also in the afternoon, she laid another batch, making a total of 64.

On 9th July I took a female *Parasemia plantaginis* L. on a mountain near Loch Rannoch, and she laid thirteen eggs. The only larvae I saw that day were one *Lasiocampa callunae* and one *Saturnia pavonia*. I have no idea what is the food plant of *plantaginis* on a Scottish mountain any more than I have been able to discover what *sannio* larvae eat on a Dorset heath, but I have found *plantaginis* larvae when nearly full grown in two localities on the Berkshire downs, feeding close to the ground on a species of *Myosotis*, and in captivity they thrive on garden forget-me-not. I have always thought the name wood tiger rather misleading as I have never found this species anywhere except in open country, especially on the slopes of chalk downs, although a particularly large form used to occur in Tubney Wood, not far from Oxford. I do not know if it still exists there.

On 26th July, while Brigadier Warry and Col. W. A. C. Carter were taking a few *Coscinia cribraria* L. on Morden Heath in typical 1960 weather, my only success was to find two *Dasychira fascelina* L. females resting on the top of heather, where they had begun to lay their eggs. One was a very small, pale specimen, which laid only about thirty eggs. On 28th July I saw Miss Pengilly find a full-grown larva of *Lasiocampa quercus* L. on a cart track on the downs near Weymouth, an unseasonable find, as at this date *L. quercus* is normally on the point of emerging from its pupa.

Encouraged by my experience with *sannio* last year and by the helpful information contained in three articles in the May "Record", I felt more confident of my chances of succeeding with this species. The eggs began to hatch on 30th June after only nine days in that state, and the *plantaginis* on 21st July, twelve days after they had been laid. The *fascelina* eggs did not start hatching until 18th August, more than three weeks after being laid. The young larvae are slow starters and did not begin to feed until two or even three days after hatching, except that they ate most, but not all, of their egg shells.

In spite of the cold, wet weather in July and August, such a complete contrast to last year's, many of the *sannio* larvae fed up rapidly, and a second brood was soon indicated. One larva started to spin up on 12th August and on 17th I noticed that two had pupated. I had given them the treatment followed so successfully last year by Mr. P. Cue and Mr. M. J. Leech (*Ent. Rec.*, 72: 62 and 118), and I fed them exclusively on dandelion. Most of their eating took place between noon and dusk, but when nearly full grown they ate at any time, almost incessantly. Before the end of August, twenty-six had spun up, all except three at the top of their cages, and fourteen were still feeding slowly, in various stages of growth. The first moths emerged on 2nd September, two males about 9 a.m. and one female in the evening.



On 23rd August I went with Dr. Neville Birkett, who was on holiday near Bournemouth, to Whiteparish, where we searched for larvae of *Cucullia asteris* Schiff. Rain started just after our arrival, and continued during most of the time that we were there. Gone are the glorious masses of golden rod (*Solidago virgaurea*) that filled the clearings in 1952, when on 22nd August the Rev. F. M. B. Carr and I found thirty larvae in an hour. They have been stifled by the inevitable conifers, but fortunately the plant survives along the edges of paths and cart tracks. We found only three larvae, all in their penultimate instar, in their usual position, closely pressed against the stem of the flower spikes. There were signs that more larvae were about: possibly they had been driven down by the rain and were taking cover among the leaves below. Late in the afternoon the weather cleared, and we paid a visit to my favourite locality for *Cucullia lychnitis* Ramb. Although the date was rather late for these larvae, we found three, nearly full grown. Fortunately for us, the scythe brigade had not been at their dirty work.

To return to *plantaginis*. I had made two previous attempts to rear this species from the egg. On 18th May 1921, some observant schoolboys told me they had seen a number of wood tigers in a field about four miles from Winchester. I went to the place indicated, and at 6.15 p.m. that day I saw at least a dozen males assembling round a female, jostling one another with their wings in their excitement, and making quite a noise. I took more than a dozen males and several pairs *in cop*. Returning to the place on 19th and 21st May I took some more specimens of both sexes. Since then I have never seen *plantaginis* in such numbers anywhere. Having obtained a few eggs, I decided to try to rear a second brood, just for the interest of the thing. It was a very hot summer, and when the larvae hatched, they fed up well, and a few moths emerged on 17th, 18th and 20th September. My second attempt was unsuccessful. A female taken at Hod Hill on 28th May 1956 laid a few eggs, but the larvae all died young.

This year, I fed my larvae on garden forget-me-not, and gave them the same treatment as *sannio*. I laid some pieces of heather on the bottom of the cage, and Mr. Cue's belief (*loc. cit.*) that "one must give larvae free access to the undersides of such food as dock, etc." was proved correct by the fact that the young larvae always kept out of sight and fed from below the leaves, revealing their presence only by the appearance of holes in various parts of the leaves. It was not until they were in their fourth instar that they began to appear on top of the leaves, and even then, not very often. I was confidently expecting to obtain a second brood when the larvae suddenly stopped feeding, and withdrew into the darkest corners of their cage. It is in this stage, I think, that the wild larvae hibernate. I had kept these larvae indoors, near the window of a room facing south, but, presumably, the August weather was too much for them. Just about the same time, my fourteen *sannio* larvae which had not become full grown, stopped feeding.

Starting on 2nd September, *sannio* of the second brood emerged steadily. Larvae and pupae were kept indoors, and the humidity of the air this August and September seems to have suited the pupae, for

moths emerged from all 26 of them, the last appearing on 19th September. There were fifteen males and eleven females. There does not seem to be anything remarkable about these figures, except that the last six moths were all males. With one exception, the males emerged in the morning between 7.45 a.m. and noon, and the females in the afternoon and evening, mostly about 5 p.m., but two later than 11 p.m. It was noted by Mr. L. G. F. Waddington (*Ent. Rec.*, 72: 119) that these second brood moths were much smaller than wild ones. I found this was particularly the case with the males, some of the females being well up to the average. This difference in size is probably merely an instance of the normal disparity between first and second broods, which is so pronounced in such species, for instance, as *Orgyia recens* and *Selenia tetralunaria* Hufn. There was very little variation in either sex, but one of the males had its hindwings much more heavily marked with black than any specimen that I have ever taken. A pairing took place on the night of 7th September, eggs were laid next afternoon, and hatched on 18th and 19th September. Now that Brigadier Warry has succeeded in bringing *sannio* larvae through the winter, I shall try to follow his example.

I have seen very few casual larvae this year. They included one *Smerinthus ocellatus* L. on sallow in my garden, one *Mimas tiliae* L. squashed on the pavement under a lime tree in central Bournemouth, and one full-grown *Sphinx ligustri* L. on a wayside hedge near Ringwood. It was the first time I had seen this beautiful creature for several years, although it used to be a common enough sight in the south of England. Perhaps their numbers have been reduced by spraying: one rarely sees a larva of any kind on a hedge nowadays. I did not see any larvae of *Arctia villica* L. which used to occur regularly at the top of the cliffs, but may have been stamped out by the feet of pedestrians and the attacks of dipterous parasites, to which they are prone. Nor did I see a larva of *A. caja* L. although my wife and I both picked up a moribund male on the footpath near our house. *Phalera bucephala* L. were unusually scarce and the only *Biston betularia* L. that I saw were two feeding on broom at Whiteparish, but several larvae of *Gonodontis bidentaria* Cl. were seen on walls and palings close to privet hedges.

Last year, many larvae are said to have perished through the drought: this year, no doubt, others may have been drowned. For next year the prospect does not appear rosy, but entomology is full of surprises, and we must hope for the best.

## Considerations of Foodplants and of Size of Leaf in the Breeding of the Purple Emperor, with other Observations

By I. R. P. HESLOP

I have described previously, e.g., see *Entomologist*, Vol. 93, p. 50, how the size of the imago may to a considerable extent be dependent on a leaf of proper size being available for pupation. During this year, 1960, I have experimented on this indication to the physical limit

possible: using for the purpose two species of *Populus*. One was *P. lasiocarpa* ("Chinese Poplar", first introduced to England from China in 1900), which was kindly expressly obtained for me by the Nature Conservancy. The other was a particularly fine and large specimen of *P. candicans* (Balsam Poplar sp.) growing in the Salisbury area, of which I had previously struck a number of cuttings. The former plant is the largest-leaved of all the Poplars, having leaves up to eleven inches in length: the latter has leaves up to nine inches in length.

I should here explain that I have never had any difficulty in getting *iris* larvae in their last instar to feed on various strains and species of European and North American poplar, with the one exception noted below. The difficulty about adaptation of this insect to Poplar as a permanent diet, in England, is that the plant usually comes into leaf at a different time from Sallow. The result is that though a larva may be fed on some strains of Poplar even before hibernation, it usually has to be put back on Sallow when it starts to stir again after hibernation. Exceptions in one direction are the Lombardy Poplar and the Aspen on which *iris* may be reared throughout, or to which it may be transferred at any stage; the same considerations, it may be mentioned, apply to Willow (*Salix alba*). The exception in the other direction is the exceedingly coarse- and small-leaved strain of Poplar growing in some situations by the sea ("Sandhill Poplar"); which I have found that *iris* will not at any stage eat, even in the last instar.

*Apatura ilia* Linn. will, however, eat Sandhill Poplar at any time, and I have also reared it throughout thereon; though, like Chinese Poplar, this plant is very late in leafing. I have reared *ilia* on willow, Aspen and Osier (*S. viminalis*) also; but have not yet tried it on either Sallow species—another experiment to come. It is possible that this apparently more adaptable butterfly would have proved a better medium for my experiments with very large-leaved Poplars; however, I did not happen to have any stock of it available in 1959-60. I should mention also that I had never before used either Chinese Poplar or Balsam Poplar as a pabulum for any species.

References hereunder to Sallow are all to *S. caprea* (Broad-leaved Sallow).

Two *iris* larvae only were available for the experiment; a third had been allowed to run wild on a clump of sallows outside, and could not be found just when it was wanted. No transfer from the potted Sallow on which they had hitherto been brought up was attempted for either until after the third moult.

The upshot was that in the penultimate instar both larvae refused both Chinese Poplar and Balsam Poplar; in the case of one larva despite the fact that it was really hungry owing to its Sallow bush having wilted while I was away at Salisbury. In the last instar they were, at different dates, introduced to the same bush of Chinese Poplar. One larva (direct from Sallow) now again resolutely refused Chinese Poplar. It was then placed on Balsam Poplar (which it ate readily and freely), and was left there for the remainder of its larval existence.

The other larva had, since 21st May, been on Willow and had undergone its last moult thereon (probably 26th May). Its willow bush was soon getting stripped (with the consequence that the larva was beginning to "ration" itself); so I, on 3rd June, somewhat dubiously (in view of the fact that the previous larva had refused it even in its last instar)

removed it to Chinese Poplar, which, however, it proceeded to eat instantly and with tremendous gusto. It was reared up thereon, pupating on 15th June, and emerging on 2nd July (8.15 p.m.).

The specimen reared up on Balsam Poplar produced a fine, very large male (though still not to be regarded as other than of typical size). The specimen reared up on Chinese Poplar had had a less good start and was normal in size, also a male. As an instance of its avidity in feeding on Chinese Poplar, it may be mentioned that one of the huge leaves was consumed in two days. The central rib of the leaf was, of course, left (as in Sallow), but here there was the unusual spectacle of most of the side ribs being left also.

The experiment, therefore, is to be regarded as inconclusive; since, although the ultra-large leaves permitted of prompt pupation and, therefore, of no loss of size through wastage (*op. cit.*), there had been no feeding thereon before the last moult. It has several times been noticed (and not only with *A. iris*) that it is good feeding in the third and fourth instars, rather than in the fifth instar, that ultimately produces specimens of above average size. The reason for this appears to me to be simple. The ultimate size of the larva is limited by the size of the head; and the head does not grow after the last moult. It was, perhaps, in any case not a good year in which to breed experimentally for size, since (as in the case of 1957) it was a year of prevalence of green-fly and the larvae (on potted bushes which had recently been in the open) were rendered very restless in consequence—sometimes walking about nearly all day with little eating. On 7th May I saw one of the larvae dislodging an Aphis from its side by lunging at it with its horns.

To test the growth potential of this larva, it will be necessary to induce special feeding shortly after hibernation. It is hoped to renew the experiment, using a larger batch of caterpillars and, if possible, Balsam Poplar (which is early in leafing) for the purpose. Possibly a diet of Lombardy Poplar before hibernation and up to the third moult may help to accustom the material to *Populus*.

One drawback about *P. lasiocarpa* is the readiness of the leaves, in this climate at any rate, for dehiscence at any time. One of my plants has produced no less than three complete crops during a season. Any additional weight may cause the leaf to become detached without warning; and it is impossible to cut a sprig and keep it in water (e.g., in the puparium) without speedy falling of all its leaves.

Incidentally, it is interesting to notice that the specimen ultimately fed up on Balsam Poplar did not go into hibernation until the first week of January, being reared until then on Sallow (bearing a second crop of leaf) and having its last feed thereon on 5th January; though it stopped feeding short of its third moult. The Sallow was late in leafing in the Spring, and feeding was not resumed until 8th April: the larva, after only 11 days slight feeding, went into set on 19th April for third moult (occurred 25th). Fourth moult took place on 15th May. On 21st May the larva was placed on Balsam Poplar. Pupation took place on 5th, and emergence on 24th June (4.25 p.m.). A sign of unusually advanced state of development was that, whereas the larva does not as a rule become intolerant of the mounting sun until about the end of April, in this case the larva could not bear it so early

as the 18th of that month. This feature seems then to be dependent not only on power and elevation of the sun but also on size of larva.

During the process of breeding in 1959-60 there were certain other fresh observations and incidents of interest which it is appropriate to mention here. All three larvae (including the one not in confinement) hibernated successfully on leaves. The leaf of the one which fed into January withered in such a manner that the larva, which had gone into hibernation head uppermost, was turned head downwards by the end of that month.

With one larva there was a curious darkening, to a remarkable degree, instead of the usual paling, during set for the third moult. After this moult it remained much darker than normal throughout its existence as a larva; but no difference from normal could be detected in either the pupa or the resultant imago. I saw throughout this larva (which went into set therefor on 26th April) undergo its third moult, and was able to record the process in greater detail than previously. The following is the original entry in my Log Book (2nd May), all times being B.S.T. :—

In the afternoon I obtained a slight reaction from larva when I touched its horns with a blade of grass. I sprayed it liberally; it moved its head up and down very noticeably, and also raised forepart slightly for a moment to let droplet run down underneath it. At about 7.30 p.m. it raised the forepart slightly; 8.5 raised forepart very erect; 8.10 skin split simultaneously in two places—on the neck and “shoulders” and just above the tail—the splits being irregular but mostly along the dorsal line. The larva now gave the extraordinary appearance of having four horns and two tails. At 8.17 the larva was free from the old skin except for a narrow band in the middle and for a fragment adhering to the face. At 8.25 the fragment was dislodged from face; and at 8.28 the moult was completed. The larva was now throughout its length lying on its old skin. When next inspected, at 10.0 p.m., the larva was found to have eaten all the cast skin except the tail fragment (which was adhering to leaf).

On the following day (Tuesday, 3rd May) this larva seemed of an irregular shape. I sprayed it freely, and by the time I left for Salisbury at 4.0 p.m. the shape was almost normal. This day there was movement of the head only; and up to the time of my departure there had been no eating (except of the cast skin) since moult.

The other larva kept in confinement had a remarkable escape from drowning on 8th May while in its penultimate instar. I sprayed the larva and liberally watered the plant in the morning; this resulted in the pot-saucer becoming brimful of water. I noted the larva on a particular outlying leaf. At about 3.30 p.m. I was horrified to find it on the rim of the saucer, being—owing to surface tension—more than half submerged. It must (judging by its previous position) have dropped clear into the water and then floated to the edge. I replaced it on the bush and drained the saucer. Later that day it must have fallen off again, since I found it at the very base of the plant and crawling up. Its bush (Sallow) was very flaccid, hence probably accounting for the weakening of the prehensile capabilities of the larva. In the evening

I removed the larva from this bush and placed it on a Willow, which was to its liking. I put the discarded Sallow bush in the open, to toughen up.

Of this last-mentioned larva I had the good fortune to see the greater part of the process of pupation, and also the imago immediately after emergence. In pupation (5th June) a separate split occurred at the head and at the tail ends simultaneously. The state, ten minutes after the process had commenced, was that the skin was in a roll from the tail upwards for several segments; at the head end the skin had split on the dorsal surface and the two horns of the old skin were standing out at right angles to the body, on each side, about a quarter of the length down the body (i.e., reckoning from the head). On next inspection, fifty minutes later (i.e., an hour after commencement) the change was found to have been completed.

On emergence of the imago (male, 24th June), the wings were fully expanded in less than ten minutes from the moment of suspension; but were still crenellated and limp. After another ten minutes the wings were quite straight.

It is not possible to judge accurately the time of emergence by mere blackening of the pupa. I have found that the appearance of the dorsal "points" is a more reliable indication. When these show out very prominently, as a series of what look almost like black vertebrae, then emergence may be expected within an hour.

The following observations are general, and without any particular reference to 1959-60. It should be noted that while in any case care should be taken not to kill too soon a bred specimen (of any species) required for the cabinet; the larger a specimen is, the longer its wings take to harden after emergence. If the specimen is killed prematurely, it is certain that the unhardened membranes will stick to the setting-paper and board, causing wholesale stripping of the scales when the specimen is removed. In the case of the Purple Emperor it is suggested that a clear night should be allowed between emergence and killing. Thus, if the specimen is found emerged one morning, it may be killed early the next morning. If it emerges in the evening, it should not be killed before noon on the following day. Any restiveness in daylight may be controlled by enveloping the cage with a dark hood or other covering—I have found my gown useful thereto! After the specimen is killed (by cyanide only), it is, of course, placed in the relaxing-tin and not set until *rigor mortis* has passed off.

I have observed of the Purple Emperor that in nature a specimen takes a trial spin an hour or so after emergence. This is of a few seconds duration only, and is made no matter what the state of the weather may be: return is made to the vicinity of the sprig holding the empty pupa case. This trial spin may be taken at any time up to sunset, and perhaps after. After the trial spin there is an interval of several hours, even when conditions of weather, etc., are suitable, before there is any further flight.

An *iris* imago dislodged—first it was by accident and later I did it by way of experiment—from its pupa case on emergence will immediately and desperately seek some stem or other object to climb up and suspend itself from. While it is so seeking, the "pumping" process is deferred. From observation, it appears that this holding back may last for ten or fifteen minutes. After this, involuntary "pumping" will occur;

whether or not the insect is suitably suspended. If it is not so suspended by then, a cripple will result. On one occasion I saved such an outcome by holding up the detached leaf and pupa case (to which the unfortunate insect had returned and was clinging) in my hand for nearly half an hour.

As soon as the wings are fully expanded, i.e., in a matter of twenty minutes or so, the fluid left surplus from the process of pumping into the wing-vessels is forcibly ejected from the abdomen.

In conclusion, I take the opportunity of pointing out that, while I have mentioned in several places the effects of temperature upon movements of the imago (e.g., *Entomologist's Gazette*, Vol. 8, p. 226), research on the effects of barometric pressure has not yet been conducted. This presents an untouched field. As some indication of the potentialities, I have mentioned (in a paper on "further considerations of times," etc., awaiting publication in the *Entomologist's Gazette*) that *iris* will not fly when really heavy rain is imminent. This may be due on occasion, as I have related, to the actual reverberation of the advancing rain; but more often there is no audible or sensible sign of what has made the *iris* retire.

"Belfield", Burnham-on-Sea, Somerset. 7.x.60.

## A Clarification of the Life-history of *Opisthograptis luteolata* L., (Lepid.) and an Analysis of its Problems

By P. A. DESMOND LANKTREE, F.R.E.S.

There seems to be some considerable disparity between the reports of different authors on the life-cycle and early stages of the Brimstone moth. This is probably not at all due to any real disagreement between authors, but only, perhaps, to their stating their own experiences of the insect, and omitting reference to those of others.

As is well known, the insect is common in the adult form, and its bright colours often attract attention. Newly emerged specimens are conspicuous on old dark palings, individuals disturbed from foliage take wing readily enough to fly leisurely in the sunshine, and both sexes come to light, though more often these are males. Thus it is not difficult to obtain a series of the species in good condition exhibiting a range of variation without going to the trouble of breeding them in quantity from the egg stage, though perhaps these collected adults will have been supplemented from time to time by the occasional larva dropping into beating equipment from the foliage of various plants. Possibly it is because of this ease with which specimens may be obtained that its life history is so variously described. Whatever the reason, the object of this paper is to draw attention to and examine these disparate reports and to co-ordinate them so far as possible into a more enlightened whole which may then be confirmed and augmented by the work of others.

If limited experience in breeding the species lies behind the different findings of individual recorders, let the present writer be the first to

admit he has only ever bred but two adults himself, and both of these were from wild larvae. As his findings differed somewhat from the first written (and modern) account he happened to look at, and caused him to compare them with others, and so led to this paper, these two specimens will be discussed first.

Both these larvae have in common the facts that they were found in the latter part of 1953, pupated before the winter, and gave rise to normal male moths of about the same size, colour and markings in May or early June of the following year. The eclosion dates were the 3rd of May and the 6th of June, but it is not certain to which larva each moth is referable.

Little more is known of the first larva except that it was found in the late summer, and was a not very impressive shade of green. That it pupated before the winter is certain, for this was just detectable through the unopened cocoon.

The second larva is rather better recorded, and remembered, for itself as much as for the circumstances in which it was found. The larva was coloured almost uniformly a bright velvet green and was found stretched out along the upper surface of a horizontal branch of an ornamental shrub on a cold autumn day in 1953. It was about full grown when found, or in any event, when offered leaves from the shrub from which it was removed, and such green leaves as could be salvaged at the time of year from its more conventional food plants, it wandered about them in captivity but was never observed to feed, nor was any frass found. It was not many days before the larva had spun up and eventually pupated. In due course, the cocoon was slit open and the pupa was seen to be a pale green, thickly "dusted" with bloom. As stated earlier, a male moth emerged the following spring.

The spiny shrub on which this larva was found had small green leathery leaves, and in flower, displayed masses of small yellow blooms which were replaced later in the year by a multitude of berries which, if the writer recalls correctly, were of a reddish hue. The plant was one of a number adorning the grassy slopes which rose from behind either platform of N. Ealing station, but while its identity remains unknown to the writer, there is no material evidence that it did constitute the food of the larva found upon it. (*Berberis* sp.?—Ed.)

The first book in which a reference to the species was quite casually encountered some time afterwards, happened to be one of Stokoe's (1948)<sup>1</sup>. His work, based largely on South's<sup>2</sup>, here almost directly quotes that author in describing the larva, and states: "The caterpillar is twig-like and brownish, tinged with greenish or purplish . . . it will be feeding, after hibernation, in the spring, and a second generation occurs in the summer".

Variability in the ground-colour of smooth-skinned moth larvae is well known to be evident in many species, and while Stokoe does not actually mention that *luteolata* larvae vary in this respect, Dr. Stovin's Introduction to Vol. I of this series<sup>3</sup> says, with general relevance, that "in a work of this nature it is not possible to indicate all these possible variations". Stainton (1859)<sup>4</sup>, however, remarks: "Larva . . . excessively variable in colour (green, brown or marbled)", so it appears that there may possibly be a graded transition series between extreme green and brown forms, and it remains to be learned whether such variation in this species is genotypic, or phenotypic and determined by an environ-



mental factor such as "crowding", as has been demonstrated before in larvae of this order. So much for the larval colour forms.

That the larva "will be feeding, after hibernation, in the spring", is again a statement unqualified by alternatives, and as it stands, suggests rather that larval hibernation is the normal, or even the sole manner by which the species survives the winter. No doubt, however, the observation itself is correct, as far as it goes.

Now, turning to Newman and Leeds<sup>5</sup>, one finds they have set out the life-cycle as follows:—

January p	February p	March p	April i o	May l i o	June l p i o
July l p i o	August l i o	September l	October p	November p	December p

where, for those not acquainted with this work, o, l, p, and i stand respectively for ova, larvae, pupae, and imagines. This also is tantamount to a statement without reservation, and by itself, conversely suggests that pupal hibernation is standard practice for this species in winter\*. That this observation is correct, again as far as it goes, is borne out by the present writer's experience.

Thus, to put both observations together, *luteolata* can apparently hibernate either as a larva or a pupa. If this is the case, as it appears to be, it indicates further gaps in the knowledge of the species' life history, and raises a proportionate number of questions. Some initial questions for instance would be as follows. What controls the rate of larval development? What determines whether the individual shall hibernate as a larva or a pupa? Is the instar in which larval hibernation is undertaken specific or varied? (In connection with the last question, it might be worth noting that while South says the larva "may be found after hibernation in the spring", Stokoe says "it will be feeding, after hibernation, in the spring", the latter suggesting that development may not be complete by then.) Also, even the statement that the species is double-brooded would seem to require confirmation, for, while it may be partly or wholly accurate, the circumstances from which this observation was derived are not given: this matter will however be further discussed presently.

To return to the subject of pupae, it is noted that neither South nor Stokoe describe or depict this stage, though the latter author mentions the cocoon. W. F. Kirby (1897)<sup>6</sup>, however, describes the pupa as "dark brown". This, though, is not in accordance with the present writer's sole experience of the stage as already described. Now Kirby's pupal description follows a description of the larva as "pale brown"

\*It should be mentioned here that these authors show the butterfly species *Pararge aegeria* L., hibernating as a larva in their tabulation of its life-cycle. but add in their notes in the last column that "the larvae feed up very irregularly from the same brood and even hibernate both as larvae and pupae", while in their notes in the last column for *O. luteolata*, they merely add "larvae feed up irregularly".

(though these descriptions may not have been made from different stadia of the same specimen), but the writer's green pupa is known to have resulted from a green larva. The question remains then, is the pupal ground-colour pre-determined by, or independent of the larval ground-colour?

Before leaving the early stages, it might be recalled that Stokoe records the ovum's shape, texture and light-reflecting capacity, and reproduces a photo-micrograph of several by A. E. Tonge. This information is a welcome addition to that afforded by South, and its kind is a highly commendable feature throughout Mr. Stokoe's two volumes on moths.

The *luteolata* ova photographed are shown on a fabric surface and may have been deposited in confinement. Although three at least of the four or five visible form a close row or small batch, it would be unwise to draw any conclusions as to whether row, batch or single deposition is normal in the wild in the absence of knowledge of the space that was available for oviposition in confinement.

It seems as if colour might be another property of the ovum that still needs recording for this species: at least it is not mentioned in a number of works examined. That Mr. Stokoe omits reference to it, not just in this, but in many other cases where the ova are newly depicted and otherwise so well described is rather remarkable, but no doubt there is reason enough, for where South describes it, Stokoe has included it.

Although colour may be a variable property in the ovum of any one species, it is well to recall that it is not any the less useful or reliable. Once these changes are known, they are not only of assistance in identification, but invaluable as an indication of fertility, and if fertile, of the degree of larval development attained, the approximate time left before hatching, and even the approximate time that oviposition occurred.

To re-open the subject of *luteolata*'s brood number per annum, if reference is again made to the cycle tabulated by Newman and Leeds, recalling also their remarks that the species is double-brooded, it would seem the first brood appears in April and, also from the table, that the earliest date for the second would be June or July.

Most authors agree that April (Stainton says from early April), is the time of the first generation on the wing in the year. South says "the moth seems to have been noted in each month from April to August, but is most frequent in May and June". Many also agree that it is most frequent in May and June, but Stainton increases the time of appearance of the adults to September. The present writer's observations have agreed with this in several years. (In the latter part of 1960, the later records have included one male at light in Oxford on 23rd August, and another male on 11th September, though both these were undersized). W. F. Kirby, however, in the work of his already alluded to, goes further and states: "the moth is found from April to October or November, there being a succession of broods throughout the fine season of the year". Perhaps October and November would be rather exceptional for Britain though, and Mr. Kirby had the Continent as much in mind?

With reference to the dogmatic statement that the species is double-brooded, the leading question the writer would ask, in his own

ignorance of the cycle, is: has anyone ever taken spring ova and reared the adults in the same year? Perhaps this has been done long ago and often since, and the statement was made on the basis of such an experience. In such a case the species would certainly be digoneutic, at least in captivity, but to extend this question a little more, is it wholly, or partly digoneutic? In other words, as the resultant larvae from a large batch of ova from one female would, it seems, feed up irregularly, a split development rate may be indicated, and a time reached where a proportion of the brood are all larvae, and a proportion all pupae. What happens next is a crucial point. If all this stock produced adults the same year, it would indeed be digoneutic. If only those that attained the pupa state early produced adults the same year, it would be part-digoneutic.

If, however, no-one has bred adults the same year as the ova were laid, the species could conceivably be monogoneutic, and yet give the impression of being digoneutic. The larvae of any one brood, it may be taken, feed up irregularly. As the species can evidently hibernate in either of two stages, consider winter intervening at this point. The following year, the winter pupae might give rise to imagines in the early part of the year by a series of irregular eclosions, and the winter larvae give rise to the later imagines by further irregular eclosions, perhaps with some degree of overlap, and the resultant progeny would have to have a split development rate with winter intervening again.

Such a system, one of staggered broods, but each brood representing only one generation per year, and yet permitting the lengths of larval and pupal stadia of corresponding brood-portions to be the same, though winter would intrude on the stadia at proportionately different times, would not seem entirely unthinkable. A collector who had raised some June pupae from spring ova in captivity, might then be misled, by seeing adults at light from July to September, into believing them to represent a second generation, even though his own pupae remained as pupae through the following winter.

The dual hibernation phase, and irregular eclosion periods could account for the five months long oviposition period in the table by Newman and Leeds (perhaps it is longer?), and these in turn could explain Kirby's remarks of "there being a succession of broods throughout the fine season of the year". However, the suggested possibility of a monogoneutic cycle may long have been over-ruled by experience to the contrary as stated earlier, but as nothing more than a suggestion, it is as much open to denial as it is to confirmation.

Whatever the cyclic system, the fact remains that it has not before been made sufficiently clear that the species has a dual hibernating phase, and this alone, while it may clarify or account for some observations, will almost certainly lead to the discovery of greater complexity in the cycle than evidently suspected to date.

Breeding the progeny of a captive female on a large enough scale would apparently be rewarding on various counts. The present writer had hoped to be able to do something of the kind before now, but as the opportunity appears to have been denied him the last few years, he has decided to present this paper in its present form and make the subject-matter thus generally available as a basis for further work.

It is hoped that the following brief summaries may indicate what appears to be generally known of the early stages, may draw further

information from anyone already possessing it, and serve as a guide to anyone who may decide to breed this species.

#### SUMMARY OF INFORMATION AVAILABLE ON EARLY STAGES

##### *Ovum*

Shape: flattish-oval (Stokoe)<sup>1</sup>.

Texture: delicately pitted over the upper surface, and shiny (Stokoe)<sup>1</sup>.

Illustrated: photo by Tonge (Stokoe)<sup>1</sup>.

##### *Larva*

External form: twig-like . . . double-pointed hump on ring six, and smaller projections on ring eight (Stokoe)<sup>1</sup>. With 14 legs (Stainton)<sup>4</sup>. The anterior 2 pairs of prolegs are vestigial (Lanktree).

Colour: excessively variable . . . green, brown or marbled (Stainton)<sup>4</sup>. Sometimes green, sometimes brown (Stainton)<sup>7</sup>.

Times of occurrence: May to September (N. & L.)<sup>5</sup>, June to October (Stainton)<sup>4</sup>. Feeding after hibernation (Stokoe)<sup>1</sup>. Possibly April is the only month in which it might not be found (Lanktree).

Foodplants: Hawthorn, Blackthorn, Service-tree, Whitebeam, Apple, Rowan, and Hazel (Allan)<sup>8</sup>, Bramble (Kirby)<sup>6</sup>.

Illustrated: various works and colour drawing by J. C. Dollman (Stokoe)<sup>1</sup>.

##### *Pupa*

Colour: dark brown (Kirby)<sup>6</sup>, pale green thickly "dusted" with bloom (Lanktree).

Cocoon: thick silken (Stokoe)<sup>1</sup>, greyish-white (Lanktree).

Cocoon site: generally near or on the ground (Stokoe)<sup>1</sup>.

##### *Life-cycle*

Variously reported and uncertain. Imagines have been recorded from May to September inclusively, or even later. Dual hibernation phase as larva or pupa.

#### SUMMARY OF INFORMATION REQUIRED ON EARLY STAGES

##### *Ovum*

All months in which oviposition occurs?

Incubation period?

Colour on deposition and subsequent changes after known periods?

Single, row or batch deposition usual?

Any selection exercised in, or varied deposition site?

##### *Larva*

Min. and max. lengths of life?

Suspended development in more than one larval instar? Which instar(s)?

% ages of any one brood (a) wintering as larvae, (b) wintering as pupae, (c) producing adults the same year?

Colour forms associated with, or independent of any diapause shown?

Colour forms associated with, or independent of environmental factors?

Colour forms obtained by selective breeding?

*Pupa*

Colour pre-determined by, or independent of larval colour?

If independent of larval colour, % ages of brown, green, etc., forms per brood?

Min. and max. lengths of life observed and seasons concerned?

*Life-cycle*

Number of broods per year?

Cyclic system?

These problems constitute but one more drop in the problematic ocean which confronts those interested in the Lepidoptera, an Order which is sometimes strangely described as "over-studied".

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- <sup>6</sup>Kirby, W. F. 1897. *A Handbook to the Order Lepidoptera*, Vol. V, p. 204.
- <sup>7</sup>Stainton, H. T. (N.D.). *British Butterflies and Moths*, 2nd Ed., p. 207.
- <sup>8</sup>Allan, P. B. M. 1949. Larval Foodplants, p. 112.

The egg is depicted in colour on Plate cclxxvii (vol. 6) of C. G. Barrett's *Lepidoptera of the British Isles*, and the pupa is described at page 351 of the same volume. Further, at the same page Barrett quotes C. R. Bree saying: "It has been definitely ascertained that this species passes the winter in the larva and also in the pupa state."—ED.

## Two Collecting Trips in Europe During 1960

By BARON DE WORMS, M.A., Ph.D., F.L.S., F.R.E.S.

### (1) ARQUATA SCRIVIA, PIEDMONT, 4th to 10th JUNE

It was largely on the recommendation of Lt. Col. W. B. Manley that I visited this delightful locality, since he had reaped a good harvest there in 1954 on several day-time trips from Genoa, 25 miles away. But Arquata Scrivia has appeared before in the literature since the late Rev. E. B. Ashby gave an enthusiastic account of his few days there in late May 1927 (vide *Ent. Rec.*, 1928, 40: 90 seq.). He had been much struck with the surroundings when he was stationed there at the end of 1918 in the First War.

I had been spending the previous week in Turin with a scientific party so that I was able to reach my destination in two hours on the main line to Genoa. The small town is situated on the northern foothills of the Appenines with undulating country around and the River Scrivia running between it and the new great trunk road. Ashby spoke of the excellence of the local Hotel Arquata, even over thirty years ago, and with its recent modernisation it was really first-class. As soon as I arrived on the warm afternoon of 4th June, I set to work up the valley running into the hills immediately behind the hotel, the scene of most of my collecting. It is about a mile long with vineyards

on the south-facing side and luscious meadows opposite. I was soon able to appreciate the wealth of lepidopterous life in the area, which was pre-eminently rich in the Lycaenidae. Damp places along the narrow path were attended by large numbers of Blues, of which by far the commonest was *Lysandra hispana* H.-S., a near relative of *L. coridon* Poda, but double-brooded. Both sexes were in abundance and only just out. Other species on these patches included *L. bellargus* Rott. and *Polyommatus escheri* Hbn. In the adjoining meadows and slopes I noted *Agrodiaetus cyllarus* Hbn. and *Lycaena amandus* Schneid. with females, all in good order. *Plebeius argus* L. was quite fresh as was also what turned out to be *P. ligurica* Oberthür referred to by Ashby as *P. argyrognomon* Bergstr. Other species seen included a number of *Coenonympha arcania* L., also an occasional *Limenitis rivularis* Scop. The next morning which was very warm I explored further up the valley where one grassy slope was alive with butterflies, mainly Blues. On this occasion, besides the species already mentioned, I took some very fresh *Thecla aesculi* Hbn., and a good many *Cupido sebrus* Bdv., mostly past their best. *Cyaniris semiargus* Rott. and *Cupido minima* Fuessly were also much in evidence. The Burnets were represented mainly by *Zygaena purpuralis* Brün. and *Z. oxytropis* Bdv. On the 7th I explored further afield up an old road to the south which wound up the slopes to a high ridge. En route I took *Argynnis daphne* W.V. and saw *Pararge maera* L., also *Melitaea cinxia* L. On the following afternoon I was joined by Signor Storace, the well-known Genoese collector, who drove me up the rough road to the high ridge where the main growth of the *Colutea arborescens* round which has been taken *Polyommatus iolas* Ochs. in this spot, but it was very windy and none were forthcoming.

The next day, the 8th, Signor Storace kindly drove me into Genoa. It was a very sultry and still day, so we went eastwards on along the Riviera road to Ruta and then drove up the winding road through the park to Portofino Vecchia. Thence we made our way on foot through the wooded slopes overlooking the sea till after about three-quarters of an hour, at about 1 p.m., we came on a forest of *Arbutus unedo*. Signor Storace went on ahead along a narrow path and suddenly gave me a shout that he had seen a *Charaxes jasius* L., and a moment later he had caught a fine male which he handed to me. After a brief spell, while it was quite cloudy but very still and warm, at least two more of these grand insects came sailing round at great speed and one even settled on an *Arbutus* bush in full view of us, but just out of reach of our nets. We did the long walk back to the car feeling very exulted. *Zyguena transalpina* Esp. and *Syntomis phegea* L. were especially numerous in this locality.

I spent the last two days at Arquata collenting in the customary valley under very warm conditions. The Lycaenids were more abundant than ever and *T. aesculi* in plenty. I counted eight species in an area of some ten square yards. Among them was *Maculinea arion* L. just appearing. Also just out were *Melanargia galatea* L., *Melitaea parthenie* Borkh. and *Spilothyris lavaterae* Esp., while *L. rivularis* was also quite numerous. I left Arquata by the evening train on the 10th and, travelling via Turin, was in England next evening after a most enjoyable and successful week in these most engaging surroundings.

## (2) VIENNA and EASTERN AUSTRIA, 13th to 25th AUGUST

Vienna was indeed a fortunate choice for the venue of the XIth International Congress of Entomology which took place from 17th to 25th August. I considered it might be advantageous to reach Austria a few days before the opening and to stay fairly near the city. I was advised that Baden-bei-Wien was a very delightful resort only 15 miles from Vienna to the south-west and well in the country. I reached Vienna by train on the morning of the 13th and went out at once to Baden, arriving in the early afternoon. The excellent Hotel Sacher is nearly two miles from the Station, but on the edge of the lovely Helenental, the southern fringe of the Wienerwald. It was not very sunny on my arrival, but I went for a walk along the valley to see what was on the wing. I soon came across a very large form of *Erebia aethiops* Esp. flying along the grassy verge of the river. *Pararge aegeria* L. was well to the fore in a pale spotted form but, apart from *Pieris napi* L., little else was on the move.

The next day I went by train some 50 miles to the south to the summit of the Semmering Pass at about 3,000 ft., but again the day was mostly overcast. However, I found *Melitaea athalia* Rott. at rest on scabious heads, but the only species I saw on the wing were *Coenonympha iphis* W.V., *Lycaena virgaureae* L. and *Argynnis aglaia* L. The 15th was a very fine and warm day which I spent in exploring further the Helenental. In some rough ground, almost adjoining the hotel, numbers of butterflies were flying. A small blue proved to be *Everes coretas* Ochs. which was very fresh. *Satyrus circe* F. was flying in the orchards, while *Argynnis paphia* L. was in great numbers with many fresh specimens in both sexes, a very late date. There were also a few *A. cydippe* L., many *Gonepteryx rhamni* L. just out, also a few *Pararge maera* L., *Colias australis* Berger, *Leptidea sinapis* L., together with many *Plebeius argus* L. and *P. idas* L. *Erebia aethiops* Esp. was in increasing numbers with the females appearing. *Hesperia comma* L. was also just starting. I revisited the Semmering on the 16th, but in spite of a much better day, there was little moving at this altitude and my only capture of interest was a fine aberration of *L. virgaureae* L., a male with the forewing spots well radiated.

A heat wave broke on 17th August, the day I moved into the centre of Vienna to attend the Congress, and the following day the temperature was well in the eighties when I joined Mr. N. D. Riley and Dr. and Mrs. Lionel Higgins at about 9 a.m. We motored some 40 miles to the east to a small town called Hainburg, situated on the borders of the Danube only four miles from the Czechoslovak frontier. We made our way slowly in the heat up a tortuous path leading through some woods. As soon as we began our walk we were soon able to realise the wealth of lepidopterous life in this locality. We soon came across *Hipparchia dryas* Scop. in numbers, but somewhat past its best at this level. Among the many blues were flying *Polyommatus hylas* W.V. and *P. meleager* Esp. As we ascended the large hill the number of butterflies increased till, when we emerged from the woods on to a grassy plateau, they seemed to be in thousands. The whole hillside was alive with *Lysandra coridon* Poda, while *H. dryas* Scop. was in hundreds fluttering about the herbage together with *H. arethusa* W.V. settling on the bare soil with both sexes in very good order. There were also a good

many *H. briseis* L., most difficult to catch. The chief Nymphalines were *Argynnis dia* L. and *Melitaea aurelia* Nick., which was sitting about the scabious heads in great plenty. As we reached the top of the hill at about 800 ft., with a grand view of the Danube, Dr. Higgins caught several *Colias* which proved to be *C. chrysotheme* Esp. A large form of *Eumenis semele* L. was flying in this area. We made a slow descent at about 1 p.m. and, as we were approaching the car on the main road, Dr. Higgins netted a female *Melitaea trivia* W.V. On the way down we saw many *Plebeius idas* L. and a few *Melitaea didyma* Esp. The small Burnet *Zygaena carniolica* Scop. was abundant.

August 20 was devoted by the Congress to a series of collecting excursions. I was among many other lepidopterists to choose the one which visited the vicinity of the famous Neusiedler See, a large saline lake some 20 miles in length with the southernmost tip in Hungary. After a thirty-mile run to the south the motorcoach landed us at some cultivated land leading up to a small hillock overlooking the lake. Fortunately, it was a fine day and during 1½ hours collecting in this spot quite a lot of lepidoptera were seen and taken. Many of the species seen at Hainburg were in evidence, including *H. arethusa* W.V. and *Argynnis dia* L., while quite a few *Colias chrysotheme* Esp. were careering about the somewhat bare hillside. *Pontia daplidice* was in numbers in the stubble fields. We also saw *Papilio machaon* L. and *Colias hyale* L. Several *Lasiocampa trifolii* Schiff. were also taken and some *Emmelia trabealis* Scop. Later in the day, on the edge of the lake itself, I took further *C. chrysotheme* Esp. and also *C. croceus* Fourc. f. *helice*. At another halt some small poplar trees were covered with larvae of *Dicranura vinula* L.

The very warm spell was still persisting on the 23rd when I accompanied a party from the Congress on a tour of the Wienerwald. During a morning halt at some sloping meadow surrounded by woods *Argynnis paphia* L. was once more in plenty, together with *Pararge aegeria* L., *P. maera* L., *P. rapae* L., and *Lycaena dorilis* Huf. The following afternoon, in very warm conditions, I revisited the Helenental. Most of the species of the previous week were still much on the wing, especially *Erebia aethiops* Esp. In a wooded glade I was surprised to see *Limenitis camilla* L. still about and a little later quite a fresh-looking *Apatura iris* L. sailed over my head. *Hipparchia alcyone* W.V. was also still flying. *Callimorpha hera* L. was plentiful on flower heads.

On 25th August I left Vienna at about 90° F. in the shade, and after an overnight train journey returned to England after a most enjoyable and interesting fortnight.

## Lepidoptera Observed at Dulwich, 1957-1960

By ALASDAIR ASTON, B.A., F.R.E.S.

Most of these observations were made at home with the aid of a blighted mercury vapour bulb, but during the first year only ordinary white light was used. Good results were, however, obtained, as the bulb hung in a position of prominence, and it is a pity that very few records were kept for 1957. Early in 1958, complaints from elderly



female neighbours forced the lamp back into insignificance on ground level and a blended bulb was obtained for the purpose of making the catches numerically worthwhile again. This was achieved at the expense of narrowing the range of species attracted. The lamp is never used as a trap and is constantly attended, as many insects do not stay long and, of those that do, some settle so inconspicuously that search is hopeless.

The list also includes insects that were caught in Dulwich Woods at night, the attraction being a tilley-lamp. Observations were also made on Dulwich golf-course by day. The list seems to include three main groups of species:—

- (a) Common species that have adapted themselves successfully to back-garden habitats and are ubiquitous.
- (b) Woodland and meadow fauna that are "hanging on" in Dulwich Woods and on the golf course. Dulwich Woods were formerly part of the Great North Wood and the part mentioned here is known as Lapse Wood.
- (c) Insects that have wandered to Dulwich, either as migrants in the accepted sense or as nomadic adults of species that have a tendency to range over the "countryside".

The names and order are taken from the list by I. R. P. Heslop.

#### PAPILIONES

*Pieris brassicae* L.  
*P. rapae* L.  
*P. napi* L.  
*Polygonia c-album* L., 19.vii.59  
*Aglais urticae* L.  
*Vanessa atalanta* L.  
*Pararge megera* L.  
*Maniola jurtina* L.  
*Coenonympha pamphilus* L.  
*Lycaena phlaeas* L.  
*Celastrina argiolus* L.  
*Thymelicus sylvestris* Pod.  
*Ochlodes venata* Br. et Grey.  
 13 species.

#### SPHINGES

*Mimas tiliae* L.  
*Smerinthus ocellata* L.  
*Laotloe populi* L.  
 3 species.

#### BOMBYCES

*Cerura vinula* L.  
*Phalera bucephala* L.  
*Habrosyne derasa* L.  
*Tethea ocularis* L.  
*Orgyia antiqua* L., at light, 11.viii.58.  
*Drepana binaria* Hufn.  
*Cilix glaucata* Scop.  
*Nola cucullatella* L.  
*Spilosoma lubricipeda* L.  
*S. lutea* Hufn.  
*Arctia caja* L.  
 11 species.

#### AGROTIDES

*Apatele aceris* L., dusky.  
*A. megacephala* Fabr.  
*A. tridens* Schiff.  
*A. rumicis* L.  
*Cryphia perla* Fabr.  
*Agrotis puta* Hübner.  
*A. exclamatoris* L.  
*A. ipsilon* Rott.  
*Euxoa nigricans* L.  
*Peridroma porphyrea* Schiff., 24.vii.59.  
*Amathes c-nigrum* L.  
*A. triangulum* Hufn.  
*A. xanthographa* Fabr.  
*Diarsia festiva* Schiff.  
*Ochropleura plecta* L.  
*Axytia putris* L.  
*Triphaena comes* Hübner.  
*T. pronuba* L.  
*T. ianthina* Esp.  
*Polia nebulosa* Hufn., rest Dulwich Woods and house light.  
*Mamestra brassicae* L.  
*Melanchra persicariae* L.  
*Diataraxia oleracea* L.  
*Hadena trifolii* Rott.  
*H. nana* Hufn.  
*H. bicruris* Hufn.  
*Bombycia viminalis* Fabr., melanic.  
*Luperina testacea* Schiff.  
*Thalophila matura* Hufn.  
*Proculus strigilis* Clerck, most melanic.  
*P. fasciuncula* Haw.  
*P. literosa* Haw., 2.viii.59.  
*P. furuncula* Schiff., melanic.

*Apamea sordens* Hufn.  
*A. secalis* L.  
*A. lithoxylea* Fabr.  
*A. monoglypha* Hufn.  
*A. hepatica* Hübn.  
*A. ypsilon* Borkh., 7.vii.59.  
*Dypterygia scabriuscula* L., two,  
 25.vi.60.  
*Antitype flavicincta* Fabr.  
*Euplexia lucipara* L., quite common.  
*Phlogophora meticulosa* L.  
*Phalaena typica* L.  
*Hydraecia micacea* Esp.  
*Gortyna flavago* Schiff.  
*Leucania pallens* L.  
*L. impura* Hübn.  
*L. comma* L.  
*L. lithargyria* Esp.  
*L. conigera* Fabr.  
*Meristis trigrammica* Hufn.  
*Caradrina morpheus* Hufn.  
*C. alsines* Brahm.  
*C. clavipalpis* Scop.  
*Petilampa minima* Haw.  
*Rusina umbratica* Goeze.  
*Amphipyra pyramidea* L.  
*A. tragopogonis* L.  
*Cosmia affinis* L.  
*C. trapezina* L.  
*Orthosia gothica* L.  
*O. incerta* Hufn.  
*Omphaloscelis lunosa* Haw.  
*Anchoscelis litura* L.  
*Polychrista moneta* Fabr.  
*Plusia chrysitis* L.  
*P. gamma* L.  
*Abrostola tripartita* Hufn.  
*A. triplesia* L., 25.vii and 5.ix.59.  
*Mormo maura* L.  
*Zanclognatha tarsipennalis* Treits.  
*Z. nemoralis* Fabr.  
*Hypena proboscidalis* L.  
 74 species.

#### GEOMETRIDES

*Hemitea aestivaria* Hübn.  
*Sterrhia seriata* Schrank.  
*S. fuscovenosa* Goeze.  
*S. aversata* L.  
*S. trigeminata* Haw.  
*Scopula marginepunctata* Goeze.  
*Calothysanis amata* L.  
*Philereme transversata* Hufn.,  
 21.vii.59.  
*Lygris mellinata* Fabr.,  
*Dysstroma truncata* Hufn., many  
 melanics.  
*Thera obeliscata* Hübn., some  
 melanics.  
*Xanthorhoe designata* Rott., 2.viii.59.  
*X. fluctuata* L. ab. *costovata* Haw.,  
 5.vi.60.  
*Oporinia dilutata* Schiff.  
*Asthena albulata* Hufn., Dulwich  
 Woods, 23.v.59.  
*Operophtera brumata* L.  
*Pelurgia comitata* L.

*Epirrhoë alternata* Müll.  
*Euphyia bilineata* L.  
*Perizoma alchemillata* L.  
*Horisme tersata* Hübn.  
*Eupithecia centaureata* Schiff.  
*E. linariata* Fabr.  
*E. assimilata* Doubl.  
*E. castigata* Hübn.  
*E. succentaureata* L.  
*E. icterata* Vill.  
*E. abbreviata* Steph.  
*E. subnotata* Hübn.  
*E. subumbrata* Schiff.  
*Gymnoscelis pumilata* Hübn.  
*Chloroclystis rectangulata* L., nearly  
 all melanic.  
*Lomaspilis marginata* L.  
*Abraxas grossulariata* L.  
*Cabera pusaria* L.  
*Campaea margaritata* L.  
*Itame wauaria* L.  
*Chiasma clathrata* L.  
*Deuteronomos alniaria* L.  
*D. fuscantaria* Haw.  
*Selenia bilunaria* Esp.  
*Gonodontis bidentata* Clerck, melanic  
 strains present.  
*Crocallis elinguaris* L.  
*Opisthographis luteolata* L.  
*Ourapteryx sambucaria* L.  
*Lycia hirtaria* Clerck, normal.  
*Biston betularia* L., all black.  
*Hemerophila abruptaria* Thunb.,  
 normal, mahogany and sooty.  
*Cleora rhomboidaria* Schiff., only  
 normal.  
*C. repandata* L., one melanic seen.  
 50 species.

#### PYRALES

*Eudoria mercurea* Haw.  
*Eurrhypara hortulata* L.  
*Nomophila noctuella* Schiff.  
*Rhodaria aurata* Schiff.  
*Hapalia lutealis* Hübn.  
*H. ferrugalis* Hübn., probably bred  
 1959.  
*H. prunalis* Schiff.  
*Anania nubialis* Hübn., breeding.  
*Notarcha ruralis* Scop.  
*Perinophela sambucalis* Schiff.  
*Loxostege verticalis* Hübn.  
*Evergestia straminealis* Hübn.  
*Mesographe forficatis* L.  
*Endotricha flammealis* Schiff.  
*Pyrallis glaucinalis* L.  
*P. costalis* Fabr.  
*Aglossa pinguinalis* L.  
*Ephestia elutella* Hübn.  
*Homoeosoma saxicola* Vaugh.  
*Euzophera pinguis* Haw., 21.vii.59.  
*E. advenella* Zinck.  
*Achroia grisella* Fabr.  
*Aphomia sociella* L.  
*Crambus pascuellus* L.  
*C. culmellus* L.  
*C. hortuellus* Hübn.

*C. geniculeus* Haw.  
*C. tristellus* Fabr.  
*C. contaminellus* Hübn., 19.vii.59,  
 once only, dusky specimen.  
*Anthophila fabriciana* L.  
*Oxyptilus parvidactylus* Haw., pos-  
 sibly this on 20.vii.58, but not  
 caught.  
*Alucita pentadactyla* L.  
*Emmelina monodactylus* L.  
 33 species.

## PSYCHES

*Zygaena ? filipendulae* L., in flight  
 on golf course.  
*Zeuzera pyrina* L.  
 2 species.

## TORTRICES

*Phalonia badiana* Hübn.  
*Euxanthia hamana* L.  
*Batodes angustiorana* Haw.  
*Capua favillaceana* Hübn.  
*Cacoecia podana* Scop., some dark  
 purple.  
*C. xylosteana* L.  
*C. pronubana* Hübn.  
*Pandemis corylana* Fabr.  
*P. heparana* Schiff.  
*Tortrix viridana* L.  
*T. unifasciana* Dup.  
*Cnephasia osseana* Scop.  
*C. incertana* Treits.  
*Argyrotoxa forskaleana* L.  
*A. conwaiana* Fabr.  
*Peronea variegana* Schiff.  
*Spilonota ocellana* Schiff.  
*S. laricana* Zell.  
*Acroclita naevana* Hübn.  
*Evetria buoliana* Schiff., 11.viii.58  
 and 7.vii.59, possibly from park.  
*E. purdeyi* Durr.  
*E. sylvestrana* Curt.  
*Gypsonoma aceriana* Dup.  
*G. sociana* Haw.  
*G. neglectana* Dup.  
*Polychrosis dubitana* Steph.  
*P. fuligana* Schiff.  
*Argyroploce nubiferana* Haw.  
*A. striana* Schiff.  
*A. lacunana* Dup.  
*A. bifasciana* Haw.  
*Notocelia uddmanniana* L.  
*N. rosaecolana* Doubl.  
*Eucosma tripunctana* Fabr.  
*E. communana* Haw.  
*E. nigromaculana* Haw.  
*E. bitunana* Haw.  
*E. nisella* Clerck.  
*E. solandriana* L.  
*E. cana* Haw.  
*E. scopoliiana* Haw.  
*Hemimene flavidorsana* Knaggs.  
*H. simpliciana* Haw.  
*Pammene juliana* Curt.  
*P. regiana* Zell.

*Laspeyresia woeberiana* Schiff.  
*L. pomonella* L.  
*L. splendana* Hübn.  
*L. grossana* Haw.  
 49 species.

## TINEIDES

*Aristotelia stipella* Hübn.  
*Epithectis mouffetella* Schiff.  
*Telphusa fugitivella* Zell.  
*Gelechia rhombella* Schiff.  
*Platyedra malvella* Hübn.  
*Phthorimaea seminella* Pierce.  
*P. atriplicella* F.R.  
*P. costella* Westw.  
*Oegoconia quadripuncta* Haw.  
*Brachmia rufescens* Haw.  
*Chrysoclista linneella* Clerck.  
*Blastodacna hellerella* Dup.  
*Mompha subbistrigella* Haw.  
*Blastobasis decolorella* Woll., Dul-  
 wich is British headquarters  
 and it is still prevalent; even in  
 Alleen's School Masters' Common  
 Room at light.  
*B. lignea* Wals., fairly frequent.  
*Dasycera sulphurella* Fabr.  
*Endrosis sarcitrella* L.  
*Borkhausenia fuscescens* Haw.  
*B. unittella* Hübn.  
*B. pseudospretella* Staint.  
*Diurnea fagella* Fabr.  
*Carcina quercana* Fabr.  
*Depressaria costosa* Haw.  
*D. arenella* Schiff.  
*Argyresthia goedartella* L.  
*A. cornella* Fabr.  
*A. ephippella* Fabr.  
*Swammerdamia pyrella* Vill.  
*Prays curtisellus* Don.  
*Hyponomeuta padella* L.  
*H. cognatella* Hübn.  
*Coleophora nigriceella* Steph.  
*Lithocolletis quercifoliella* Zell.  
*L. tristrigella* Haw.  
*Gracillaria syringella* Fabr.  
*Eidophasia messigiella* F.R.  
*Ypsolophus xylostellus* L.  
*Y. scabrellus* L.  
*Y. vittellus* L.  
*Plutella maculipennis* Curt.  
*Leucoptera laburnella* Staint.  
*Monopis rusticella* Hübn.  
*M. crocicapitella* Clem.  
*Tinea biselliella* Hübn.  
*Tinea pellionella* L.  
*Acedes ganomella* Treits.  
*Incurvaria muscatella* Fabr.  
*Adela viridella* Scop.  
*Nemophora schwarziella* Zell.  
 49 species.

## MICROPTERYGES

*Hepialus lupulina* L.  
*Hepialus humuli* L.  
 2 species.

TOTAL NUMBER OF DULWICH SPECIES OBSERVED, 1957-60 :—286 species.

## FOODPLANTS

It was decided to make a list of the likely foodplants and materials of the above insects. Using my own observations of larvae and the works of Scorer and Ford, it has been possible to assign to each insect a plant known to grow here, in some cases two plants, and this accounts for the numerical discrepancy. The list of food-plants follows, arranged according to most obvious locality. The number following each plant refers to a suggested total of species feeding upon it, but I have no doubt that there are many overlaps and very many here as yet unobserved. Polyphagous species are treated separately at the end.

(A) <i>Back-garden habitats</i>	Total
WEEDS such as Chenopodium and Atriplex 8, Polygonum 5, Dandelion 5, Willow-herb 1, Mugwort 4, and Convolvulus 2 .....	25
GARDEN RUBBISH such as vegetable matter, fallen leaves, refuse 12, dead wood 2, moss and lichen 2, bees' nests 1, birds' nests 1 .....	18
INDOORS in stored food 1, wool and skins 3 .....	4
GARDEN PLANTS such as Sweet William 1, ferns 1, Delphinium 1, Thrift 1, Tansy 1, Antirrhinum 1, Hollyhock 1, Strawberry 1, Mint 2, Rose 6, Honeysuckle 3, various Chrysanthemum genus 2, Euonymus 1, Brassicas and Cruciferae 10 .....	32
GARDEN TREES AND BUSHES, as Apple 13, Privet 6, Laburnum 1, Lilac 1, Currant 4, Ash 5, Elder 3 .....	33
(B) <i>Roadside planted trees</i>	
Birch 6, Sycamore and Plane 4, Cherry 3, Lime 2 .....	15
(C) <i>Dulwich Park</i>	
Pine 5, Larch 1, Yew 1, Holly 2, Beech 1, Poplar 8, Willow 2 .....	20
(D) <i>Playing fields (former pasture)</i>	
Hawthorn 14, Elm 10, wasps' nests 1 .....	25
(E) <i>Golf Course</i>	
Nettle 12, Bramble 5, Bittersweet 1, Sorrel and Dock 7, Thistles 8, Ragwort 4, Hawksweed 2, Plantain 1, Trefoil 2, Bedstraw 1, Old Man's Beard 1, Buckthorn 1, Woundwort 1. (Mr. Lousley doubts whether Buckthorn still exists in Dulwich but I have seen it recorded in old Floras.) .....	46
(F) <i>Dulwich Woods</i>	
Oak 16, Hazel 1, Hornbeam 3, Sallow 4 .....	24
(G) <i>Grasses—General</i>	
As weeds, on lawns, playing-fields, park and golf course ...	38
(H) <i>Polyphagous species</i>	
..... at least	15
Rough Total .....	295

## COMMENTS

Dulwich is interesting in that, whereas it is close to the centre of London, it has extensive open land which has, however, been modified by man. The whole area is managed by the Estates Governors of Alleyn's College of God's Gift who prohibit tree-felling and the introduction of industry. Dulwich Village itself is almost an oasis of trees and the remnants of oldish woodland on higher ground give good opportunity for tree-species.

Apart from these features it is interesting to note that the pattern is fairly typically suburban as regards the Lepidoptera. Although a heartening number of insects manage to subsist in garden habitats, it should be said that they are mainly common or feed on common plants or are polyphagous. Other species have shown initiative by colonising ornamental trees in the park and even street-trees have their inhabitants, but spraying, even to tree-top level, is becoming increasingly widespread.

It is to be hoped that the fad for spraying will not continue for long, as it will make surveys of changing population impossible. For instance, there is probably a significant difference between the moths of Dulwich 1960 and the moths of Dulwich 1898. One must not be obstinate in the face of real progress but it is to be hoped that the dangers of spraying will be realised in time for entomologists to observe, for example, the influence of smokeless zones on melanism and other changes in insect population over the next half-century.

## ACKNOWLEDGMENTS

I wish to thank Mr. S. Wakely for identifying many of the micro-lepidoptera and Mr. J. E. Lousley for information about the plants of Dulwich. I am also grateful to many friends who have brought me specimens.

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## The Larva of *Neureclipsis bimaculata* (L.) (Trichoptera, Polycentropidae)

By ALLAN BRINDLE, F.R.E.S.

The campodeiform larvae of the Polycentropidae spin silken nets in lotic or static water on pondweed, submerged stones, or other supports. They may be recognised by the broad head, by the often deep intersegmental constrictions of the abdomen which is frequently reddish or pinkish, by the long, widely diverging anal appendages, and by the degree of sclerotisation of the thoracic nota, of which only the pronotum is sclerotised, bearing a complete plate.

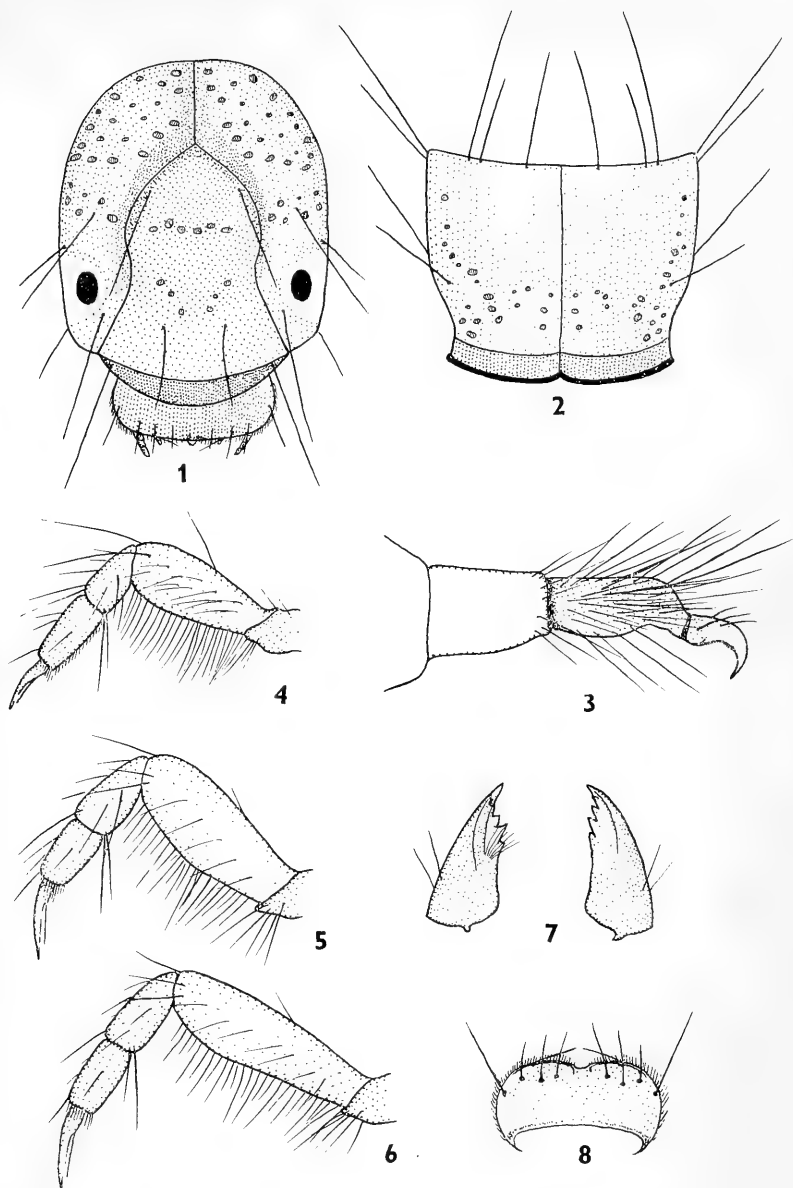
The Philopotamidae is the only other family of British Trichoptera possessing net-spinning larvae which have only the pronotum sclerotised. These two families may be separated in the larval stage as follows:—

1. Head broad, rounded, not unicolorous but with darker spots or bands; abdomen often reddish usually with the intersegmental constrictions well marked and often deep; labrum sclerotised, dark coloured (yellow or brown) ..... Polycentropidae
- Head elongated, parallel-sided, unicolorous yellow or reddish; abdomen whitish or yellowish, intersegmental constrictions rather slight and not well marked; labrum soft and whitish ..... Philopotamidae

The larva of *Neureclipsis bimaculata*, the only species in this genus, is separable from the rest of the Polycentropidae by the chaetotaxy of the segments of the anal appendages. These consist of two long obvious segments—an apparent basal, and a distal segment. A third segment is present but is small and inconspicuous, and is not considered here. In *Neureclipsis* only the distal segment is covered with setae, the apparent basal segment has setae only on the extreme distal part (fig. 3). In all other genera of the Polycentropidae both of these obvious segments have setae along their length. Lestage (1921) gives a similar feature for the separation of this larva, though his other characters seem to be based on errors.

Larvae of *Neureclipsis* were collected in large numbers from the outflow of Llynau Mymbyr, Capel Curig, North Wales, in June, 1960. The water at this point is channelled into a deep narrow passage lined with large stones and is torrential. The nets were found beneath stones by the edge of the outflow and not in the fastest flowing water. The apparent restriction of this species to the outflows and inflows of lakes, as remarked on by Mosely (1939), has been noted from personal experience.

Pupation occurs in silken cocoon strengthened by the addition of small pieces of stones, fastened to the underside of stones in the water. The adults are very active at night, and in the day during hot weather, having a short unsustained flight, and seeking shelter amongst stones or vegetation when disturbed from rest. The females are much larger than the males; the size of the larva quoted below refers to the larger specimens.



Figs. 1-8. Larva of *Neureclipsis bimaculata* (L.)

Fig. 1, head, dorsal. 2, pronotum, dorsal. 3, anal appendage. 4, anterior leg.  
5, 6, posterior legs. 7, mandibles, dorsal. 8, labrum, dorsal.





*Larva* (final instar).

Length 18 mm., breadth 2 mm. Head (fig. 1) broad, rounded, yellow, slightly darkened along fronto-clypeal and occipital sutures, and with brown spots arranged on the posterior part of the head and on the fronto-clypeus; eyes blackish, rather angular, in whitish areas; chaetotaxy of head as fig. 1; labrum (fig. 8) dark yellow with two very long setae laterally and with six shorter setae arranged in a row towards the anterior margin; anterior and lateral margins with short setae, the former also with two long setae directed towards the mid-line; mandibles (fig. 7) yellowish red; asymmetrical, rather narrow, left mandible with a brush of setae dorsally, and with six sharp teeth (two dorsal and four ventral) the apical one the largest; right mandible without a brush of setae, and with five sharp teeth, the apical one the largest; both mandibles with one pair of long setae on external edge. Pronotum (fig. 2) yellow with brown spots posteriorly and laterally, and with a well marked median longitudinal suture, posterior border darker and actual posterior margin black; chaetotaxy as fig. 2.

Legs (figs. 4-6) relatively slender, yellow, anterior legs shorter than the posterior pairs; anterior femur with a ventral row of long subequal setae; posterior legs with a row of long setae of unequal length; all tarsi with short setae apically, anterior tarsi with short setae ventrally in addition; tarsal claws long, slender, yellowish, each with a long yellow setae.

Abdomen reddish along mid-dorsum, pale reddish laterally, whitish ventrally; intersegmental constrictions very deep; no gills or lateral line. Anal appendages (fig. 3) long, widely diverging, with two obvious long segments, the basal one whitish, with setae only on the extreme distal edge, the distal segment yellow, blackish proximally, covered with long setae; anal claw long, curved, yellowish, with fine serrations ventrally from near base to mid-length; three sub-dorsal setae.

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## Notes and Observations

*HERSE CONVOLVULI* L. IN HAMPSHIRE.—It may be of interest to record that a male *Herse convolvuli* L. was taken at a lighted window by a neighbour, Mrs. D. W. Haynes, at Crow Hill, Ringwood, on 14th September last, at 10.30 p.m. The night was tolerably mild after a morning and afternoon of almost unceasing rain. The moth was in good condition.

In what appears to have been a good year for our native hawk moths and their larvae, the Ringwood district has been no exception, for an unusual number of adults and larvae have been brought to my notice. This particularly applies to imagines of *Hemaris tityus* L., *Hyloicus pinastri* L. and the larvae of *Smerinthus ocellata* L., *Sphinx ligustri* L. and *Deilephila elpenor* L.—BOLINGBROKE, Crow Hill, Ringwood, Hants. 17.x.1960.

GOOD NEWS FOR BATS.—I have received the following note in a letter from Mr. Percy Cue: "Last night (23rd May) a small bat *settled* on my sheet, grabbed a moth, and flew away again. I have never seen this before, and it appeared to do it without the slightest trouble".—H. SYMES, 52 Lowther Road, Bournemouth. 24.viii.1960.

A LATE LARVA OF *LAOTHOE POPULI* L.—Cycling to the station early on the morning of 15th October, I noticed a green larva on a garden fence, and on investigating it I was surprised to see that it was a Poplar Hawk larva about an inch and a half long. Although the leaves were falling, I returned it to the lower shoots of a neighbouring poplar tree, though I fear there is very little chance of its being able to feed up to pupation stage.—S. N. A. JACOBS, 54 Hayes Lane, Bromley, Kent. 19.x.1960.

*LEUCANIA PUTRESCENS* HUBN. AND *L. UNIPUNCTA* HAW. AT WESTON-SUPER-MARE.—I would like to record the presence in my moth trap in my garden of single specimens of *L. putrescens* and *L. unipuncta* on the nights of 25th July and 12th September respectively. Both moths would seem to have wandered rather a long way from their usual known habitats.—C. S. H. BLATHWAYT, "Amalfi", 27 South Road, Weston-super-Mare. 30.ix.1960.

*MALACOSOMA CASTRENSIS* L. IN SUFFOLK.—With reference to Mr. R. F. Bretherton's report of a specimen of *Malacosoma castrensis* L. a little north of Southwold, and his remarks on other Suffolk records of this insect, it may be worth while to record that on 3rd July 1952, when visiting Havergate Island, near Orford, to see the avocets, my wife and I found a colony of *M. castrensis* on the island. I reported this to Mr. P. J. Burton—who was then still at Lowestoft—and I remember that in replying he told me there was a record from Walberswick (only two or three miles south of Southwold). Mr. Burton now writes to me: "I found larvae swarming at Walberswick in 1937 in May, but although I went there in several subsequent years I never saw another".—F. H. LYON, Sampford Peverell, Tiverton, Devon. 10.x.1960.

*LITHOSIA QUADRA* L. AND *LEUCANIA ALBIPUNCTA* FAB. IN KENT.—The night of 24th June 1960 was extremely warm and sultry when I set up my m.v. trap at the Duke's Head at Ham Street. A flood of moths began arriving and by the morning I estimated the total at over 3,000, about 80% being *Agrotis exclamatoris* L. Fortunately, about 2 a.m., when I came in from the woods, I noticed a Footman sitting on the grass near the trap and, to my surprise, it turned out to be *Lithosia quadra* L., a male in good condition, an abnormally early date for this species, which usually appears a month later. The possibility that it was a migrant is increased, since another example was also taken in Kent a few days afterwards.

In the same locality, on 7th September, I took a male *Leucania albipuncta* Fab. in my trap. I gather it has been a fairly good year for this species.—C. G. M. DE WORMS, Three Oaks, Woking. 1.x.1960.

HERSE CONVULVULI L. AT HAM STREET, KENT.—On the night of 26th-27th September, I had a fresh male convolvulus hawk in my m.v. trap at the Duke's Head. I gather several had been taken recently in the district and a large number seen in the south-west of England.—C. G. M. DE WORMS, Three Oaks, Woking. 1.x.1960.

NOTES ON REARING PAMMENE AURANTIANA Stgr.—As already reported (*Ent. Rec.*, 72: 34) I bred a specimen of *P. aurantiana* from sycamore seeds on 19th December 1959. Knowing that this species was present among the larvae collected at Mickleham, Surrey, it was a matter of great interest to know in what numbers they actually were. A careful watch was kept on the containers containing the wood, etc., in which the larvae had spun up, but although both Mr. Chalmers-Hunt and I bred a few *Pammene regiana* Zell. in May, we failed to get any *aurantiana*. However, several friends were more successful. Mr. Fairclough bred five *aurantiana* in June from half-a-dozen cocoons which I gave him. These were spun up in paper or linen. Mr. Mere kept his outdoors until April and reported that he bred about two dozen *aurantiana* as well as some *regiana*. Mr. L. T. Ford also reported that he bred a few *aurantiana*. This year I am trying my luck again with this species, and intend to keep the material containing the cocoons outdoors during the winter, as failure to do this was probably the cause of my failure. From sycamore seeds collected this year on 17th September, larvae were found leaving the seeds on the 21st ready for pupation. However, larvae were not as plentiful as last year—probably due to the fact that the trees were more loaded with seeds, particularly the higher branches.—S. WAKELY, 26 Finsen Road, London, S.E.5.

CALOPTILIA PYRENAEELLA CHRET. AND GRACILLARIA SEMIFASCIA HW. IN THE ISLE OF WIGHT.—In the *Entomologist* for 1933, page 230, Mr. L. T. Ford reported that he had bred nine specimens of *Caloptilia pyrenaella* from larvae found in "cones" on maple. The maple leaves were collected in the Isle of Wight on 9th June, and the moths emerged from 2nd to 4th July. At the time he was expecting to breed only *Gracillaria semifascia*, a series of which also emerged. Mr. Ford did not collect again in this locality, and there have been no further reports of the occurrence of *pyrenaella* in Britain. Two years ago I had a day trip to Cowes in early July and visited Gurnard, where I had seen cones on maples in August several years previously. It seemed possible that *pyrenaella* might be present here, but from the few tenanted cones collected *semifascia* only emerged. I realised later that it should have been early June—not July. During some correspondence with Mr. J. Lobb, who lives on the Island near Yarmouth, I mentioned about this species occurring on maple, and he was kind enough to send me a number of cones on 2nd July. This date again seemed too late, and I was not very hopeful of finding any larvae present. However, I noticed one larva moving about, evidently looking for fresh leaves as those sent had got rather dry. This larva fed up on fresh leaves and soon spun up and pupated. I placed the rest of the leaves in a glass container and was delighted when a specimen of *pyrenaella* emerged on 18th July. The cocoon must have been on one of the leaves, the larvae having fed up some weeks previously. On 1st August a *semifascia* emerged (from

the larva previously mentioned) and later still another, but that was all. *Gracillaria semifascia* is looked upon as a single-brooded species in Britain, with the larvae occurring in June and July. Certainly in my experience all the maple cones found in August have been empty. To my great surprise, Mr. Lobb wrote to me in September saying that he had found a number of fresh cones on maple in the Island. He collected some on the 8th, and sent me two larvae on the 10th September, one of which had spun up *en route*. On the 13th I received another parcel from him containing eight cocoons on maple leaves. We had great hopes that these would prove to be *pyrenaella*, as September seemed much too late for *semifascia*. However, the moths emerged from the 9th September to 3rd October, and all proved to be *Gracillaria semifascia*. This seems to point to there being a second brood of *semifascia*—at least in the Isle of Wight.—S. WAKELY, 26 Finsen Road, London, S.E.5.

A NOTE ON BREEDING DIACRISIA SANNIO L.—Most of the notes on the breeding of this insect which have appeared in the Record recently have referred to obtaining a second or third brood the same year, and I should be very interested to know the size of these insects compared with those taken in the wild.

Mr. Waddington in his article in the May 1960 Record states that those he bred were appreciably smaller than the wild ones he had caught, but that the two larvae which he managed to hibernate produced two fine moths.

On the 23rd of June 1959 a female I had taken in East Dorset laid a good batch of ova. These duly hatched and I fed the larvae with dandelion placed on the top of heather in a small metal container. I made no attempt to force them and none spun up that year, although one or two which I had given to Miss Pengilly did produce moths the same year.

I sleeved twelve larvae on the 7th September on a flower-pot with growing dandelion, a few twigs of heather, and some fallen leaves. This pot was kept standing in a saucer so that water could be given, and then placed in a lean-to shelter open at each end.

On 27th February, which was a warm day, I noticed one larva on the inside of the sleeve, so I opened it up and found all twelve larvae still alive. Four were put into each of three small containers in my study and fed on the same diet as before. Later they were transferred to breeding cages. One which was always smaller than the rest died during the first week of April. The rest all duly pupated, the first one spinning up on April 24th.

Eight females hatched between 21st May and 11th June and three males between 14th and 16th June.

Each moth was considerably larger than the wild ones I have taken. Mr. Symes, to whom I showed them, called them "monsters", and he is now trying to hibernate some larvae to achieve even larger results.—Brig. H. E. WARRY, Eastbrook, Upwey, Dorset. 9.x.1960.

CIRRHIA GILVAGO ESP. NEAR EDINBURGH.—I stayed with Mr. and Mrs. Eric Stevenson on the night of 15th September 1960 at East Linton, East Lothian. They kindly let me run my m.v. trap in their garden,

over the wall of which was a row of wych elms and a bed of butterbur. In spite of a cold night, among several visitors was a pale lemon sallow. South reports its northernmost limits as Durham, but it is probably spreading north, as it is now very common in the Lake District. It would be interesting to know whether it is now well established in the Lowlands—C. G. M. DE WORMS, Three Oaks, Woking. 1.x.1960.

ACHERONTIA ATROPOS L. IN PERTSHIRE.—Mr. Edgar Hare and myself spent four days in the Highlands recently, with our headquarters at Struan, where Mr. J. Webster kindly let us plug in my m.v. trap at the back of his garage at Calvine, which is on the edge of the moors. The night of 17th September was particularly warm and overcast, with plenty of lepidoptera at light. It was indeed a great surprise to find among some 250 visitors to the trap, comprising 32 species, a huge female Death's Head Hawk in first class condition. It was resting among the cardboard trays. To our astonishment, on the following night, which was less favourable, there was yet another in the trap, this time, a male also in very good order. Evidently, this was part of a migration northwards, and my trap was just in line for it.—C. G. M. DE WORMS, Three Oaks, Woking. 1.x.1960.

ECHOES FROM THE PAST.—To Mr. H. Symes' interesting comments on The Standard under this heading (*antea*, 194) might be added those of the "Record's" editor from a letter dated 9th May 1960. Mr. Jacobs said: "I have been in touch with The Standard (Evening) and I am told that their paper has existed from 1860 and used to be of a format similar to The Times". This similarity in lay-out was at once striking from the cuttings concerned, too.

With regard to *Strymonidia pruni* L., Mr. R. F. Bretherton stated in 1939 that this species was first discovered in Oxfordshire by Mr. W. F. Burrows in June 1918, and he also indicated the locality in broad terms. Sir E. B. Poulton's personal discovery of the species, referred to in the postscript of the letter he wrote, was quite specific, and it is in this particular spot that it is thought *pruni* may also still exist. Mr. Symes' letter has also been acknowledged privately.—DESMOND LANKTREE, 13 Richmond Road, Oxford. 15.x.1960.

PLUSIA BRACTEA FABR. IN DERBYSHIRE.—A fresh female of this species was captured here at willow herb flowers on 16th July 1960. During the same night, the moth deposited about fifty eggs. These duly hatched and the larvae seemed to find leaves of stinging nettle satisfactory. Six of the caterpillars grew quickly and were kept together in one container. They pupated within cocoons spun among leaves towards the end of August. The remaining larvae grew very slowly, although they continued to feed. Eventually disease appeared and they all died. The six pupae produced fine imagines, of which two were males and four females, between 22nd September and 1st October.—T. D. FEARNEHOUGH, 13 Salisbury Road, Dronfield, Derbyshire. 10.x.1960.

HARPALIA FULVALIS HUBN. AND CRAMBUS CONTAMINELLUS HUBN: A CORRECTION.—May I ask you to correct in an ensuing "lieferung" of the Record: a mis-spelling on page 186. Fryer and Diver found *contaminellus* and *fulvalis* at Parkstone Poole, Dorset; actually *fulvalis* in Mrs. Maud Diver's garden, and *contaminellus* on Parkstone golf links. The printer has Parkestone, and there is a Parkestone quay at Harwich as all will know, but that is nowhere near the sub-division of Poole called Parkstone, and some day, if this is not corrected by those who know, some will transfer the records to East Anglia and one more geographical blunder will plague future entomologists if such there be.—W. PARKINSON CURTIS, Ladywell Cottage, Branksome Park, Bournemouth, Hants. 28.ix.1960.

## TO OUR SUBSCRIBERS

The treasurer appeals to subscribers to send their subscriptions for 1961 early; before the end of December 1960 if possible. Delay in payment of subscription entails a lot of work and expense for postage and printing.

He also appeals to subscribers not to pay twice. One subscriber sent two cheques this year in addition to payment by banker's order.

Receipts will be sent automatically for payments by postal order but not for cheques unless the subscriber requests a receipt.

He asks those who subscribe through a subscription agent to write early to their agent as this method of payment often entails much delay, and sometimes, after a lapse of time, leads to the monthly issues being withheld owing to the fact that the treasurer is uncertain whether the subscriber wishes to continue his subscription or not.—CLIFFORD CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts.

## Current Notes

That handsome moth *Ennomos autumnaria* Werneburg, the Large Thorn, seems at last to have found our changed climate to its liking and after being confined to our south-eastern coastal counties for a century and more is now spreading inland and becoming quite a common insect. Barrett, writing at the beginning of this century, recorded that it was "confined to the coast of the South of England and almost to the extreme south coast" and went on to speculate "whether it is a frequent immigrant or that it is only able to exist in a climate little affected by frost". About a century ago (1855) the first specimens seem to have been noticed in Kent and Sussex.

Our friend Mr. Clifford Craufurd tells us that *autumnaria* has appeared quite frequently at his m.v. light in East Herts during the last few years. In 1953 the first one occurred on 19th September; in 1955 there were five in his trap between 26th and 30th of that month; the following year four appeared during the same period; in 1957 three more and in 1958 four. Then came a spurt which seemed to

show that the insect had obtained a footing in the district—ten between 1st and 25th September in 1959 and this year 23 up to 3rd October “and they are still arriving at the trap”, writes our friend on that date. Four miles away, at Sawbridgeworth, *autumnaria* was first taken in 1954.

Having come so far inland this species will probably spread east and west along the line of the summer isotherm which bounds its range and it will be interesting to hear from our readers how far to the west it is now being taken. A rumour has reached us that it has been seen at Bedford this year. Can any of our readers confirm this? And are there records from Cambridgeshire yet?

*Hadena compta* Schiffermüller also has been extending its range these last few years. In 1954 one appeared on a lighted shop window in Bishop's Stortford, East Herts, and since then it has occurred with increasing frequency at light. Until 1958, however, only one or two appeared each year; then, in 1959 Mr. Craufurd took 13 between the 12th and 30th June. This year (1960) the same number was recorded here and that the insect is breeding in this locality is shown by the fact that in 1958 four moths emerged from seed-heads of Sweet William gathered the previous year in Mr. Craufurd's garden. Last year the same source yielded 24 moths and this year (1960) the number of pupae from this particular garden is no less than 79. “I think these pupae are all probably *compta*”, writes our friend, “for I have bred no other seed-feeders from these Sweet Williams”. Will our readers please report if *compta* has appeared, this year, farther north and farther west? It will be interesting to keep track of *compta*'s increasing range.

This autumn, after a poor season for moths, things looked up a bit in East Herts. On 23rd September with the thermometer reading 60° F. at dusk and 50° F. at dawn, with a S.W. wind and some rain, no less than 778 moths came to a m.v. light. Unhappily it must be added that no less than 579 of them were *Noctua c-nigrum* Linn. This is always a common insect in our particular locality and in the days when we went sugaring sometimes there were quits incredible numbers on sugared posts and fences. But 1960 seems to be a peak year for *c-nigrum* in this part of the country at all events. Next evening, 24th September, with the thermometer standing at 50° F. at dusk and 43° F. at dawn, N.W. wind with a clear starry welkin, only 90 moths thought it worth while to take to the wing and in the six days following, during which the wind continued to blow from the N.W., the numbers which visited the trap were 50, 85, 77, 49, 74 and 67. So there seems to be little doubt about the virtue of a S.W. wind for the moth-hunter.

On October 1st, Major A. E. Collier came to see us and brought with him a box of lovely things—choice aberrations of *L. phlaeas*, *A. hyperantus*, *L. corydon*, *M. jurtina* and other species. And there, right at a bottom corner of the box was, to our amazement, a fine fresh female *Lycaena dorilis* Hufn. “Dorilis, by Jupiter!” said we;

"and where on earth did you catch that?" "I didn't catch it myself", said he; "it was caught on the Downs at Seaford, Sussex, in August 1958. Possibly it had been blown across the Channel". Some of these fine aberrations were shown at the South London Annual Exhibition last month and the *dorilis* too.

The *dorilis* gave us much food for thought and we're not so sure that it *was* "blown across the Channel". It is one of those butterflies which avoid our island for no reason which we can advance as adequate. It may well be described as the commonest European 'copper' and one comes across it almost everywhere on the Continent. It ranges from Denmark all the way eastwards through (what we used to call) Asia Minor to Mongolia and so far as we can find the only places in Europe from which it is absent are southern Spain and Sicily. It flies on the coasts of all the countries fronting England and one can sometimes catch it on the seashores. It does equally well on mountain sides right up to the tree line. We can think of no other European butterfly which has such a wide range of physiological adjustment. It seems to do well everywhere.

For all this, only one solitary specimen has been recorded in Great Britain prior to Major Collier's discovery. This was caught at Lee, near Ilfracombe, Devon, in 1887. Of course all lepidopterists are prone to wishful thinking but we will wager anything in reason, up to sixpence, that *L. dorilis* flies over the rough grasslands of our southern coastal counties well nigh every year. It is overlooked by collectors because the male at least is such a small inconspicuous insect, a dingy brown with no copper at all about it, nor is the female at all conspicuous. The larva feeds on such sorrels and small docks as grow in hay fields, and collectors wandering about in hayfields in May (when the first brood is on the wing) are not encouraged by farmers. In this country the second brood may not occur. To our mind it is almost incredible that only two specimens of this small butterfly, flying so commonly on the coastlands facing our island from Denmark to Finisterre, should have been 'blown across' in 73 years.

The scarcity of butterflies—in Great Britain—this year has been remarkable, and depressing. Perhaps the reason for it is not so recondite after all. Last year was a remarkably fine one so far as weather was concerned. There were hot sunshiny days galore from spring to autumn, June temperatures being abnormally high. Already this autumn (1960) reports of second broods in 1959 of species which are normally univoltine, such as *A. cardamines*, *A. selene* and *E. tages*, are beginning to appear in the magazines. And so, as Major Collier has pointed out to us, it is possible (probable as we think) that many more species 'attempted' a second brood and that eggs from these broods either failed to hatch or hatched after the fine weather had gone and so the emergent larvae perished. We should like to hear the opinions of our readers on this matter.



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## EXCHANGES AND WANTS

- For Sale*.—Entomological Cabinets, all sizes, due to change over to unit system. Details on application. Easy payments if required. R. W. Watson, "Porcorum", Sandy Down, Boldre, Near Lymington, Hants.
- For Exchange*.—"Field Lepidopterist", Tutt., 3 Vols. "British Moths", Morris, 4 Vols., 1891. "Tineina", Stainton, 1854. "British Tortrices", Wilkinson, 1859. Also wanted: Storeboxes, 13 × 9 or 14 × 10. Cartwright Timms, 524 Moseley Road, Birmingham, 12.
- Wanted*.—15 to 20 large-drawer Mahogany Cabinet. Brady or Gurney preferred. H. N. Moon, "Budleigh", 319 Coniscliffe Road, Darlington.
- For Sale*.—Early run of Entomologist's Record. Vols. 1-37, 1890-1925. Bound in 19 volumes in half calf. All offers considered. M. J. Cotton, B.Sc., 27 Hatherley Street, Cheltenham, Glos.
- Orthoptera*.—Crickets of the subfamily Gryllinae (except domestic Species) and grasshoppers of the subfamily Pyrgomorphinae from all parts of the World required in any quantity for research work in morphology, taxonomy, cytology, and experimental biology; dry or fluid preserved or living. Please contact D. K. Kevan and R. S. Bigelow, Department of Entomology, McGill University, Macdonald College, Quebec, Canada.
- For Sale*.—10-Drawer Cabinet, Beating Tray, Breeding Cages, Setting Boards, Collecting Boxes, etc.—Telephone Mill Hill 3488. John G. Dunbar.
- Wanted*.—A Ten-drawer Cabinet (second-hand) in good condition. Height not to exceed 30 inches. Details and price to Col. H. J. Rosset, The Old School House, Bodinnick, Lanteglos, by Fowey, Cornwall.
- Wanted*.—Records of *Lathridius* spp. (Coleoptera Lathridiidae) especially *L. bifasciatus* Reitter, with locality, date, and if possible details of habitat. E. Lewis, 8 Parry Road, London, S.E.25.
- Wanted*.—Cabinet(s)—about 40 drawers; good quality.—Lt. Col. W. B. L. Manley, Greenways, Shoreham Road, Otford, Kent. Telephone Otford 578.
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## RECORDS OF THE BRITISH ZYGAENIDAE

I have in preparation a paper on the distribution of the species of *Zygaena* and *Procris* found in the British Isles, with maps showing the geographical range of each species in these islands. I would welcome authentic records, especially from Ireland, Scotland, Wales and South-West England. Records of *trifolii* (both the early May-June subspecies and the July-August subspecies) and *loniceræ* would be of special interest, including any from southern England, as here the range of the two species overlaps. As these species, *trifolii* and *loniceræ*, are sometimes difficult to separate, I shall be pleased to determine any doubtful specimens, which should be sent to me by 31st December, 1960.

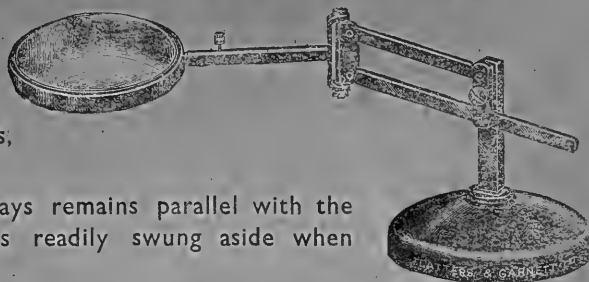
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(Founded by J. W. TUTT on 15th April 1890)

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FONSECA, F.R.E.S.

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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

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*with the assistance of*

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## Butterflies in Partial Eclipse

By Major A. E. COLLIER, M.C.

As I write on 31st October, I see that since 5th July there have been 94 days of measurable rain, and the hot and promising June, with its eleven days over 80°F., seems immeasurably distant.

On 7th June I saw my first few *Maniola jurtina* L. males, and a week later, after a wet spell, both sexes were flying in our local fields, with a good number of *Polyommatus icarus* Rott. and a newly emerged lot of *Coenonympha pamphilus* L. My *jurtina* fields are almost permanent rough grass, cut once a year only for hay, and topsoiled every seven or eight years. They usually bear excellent crops of flowering weeds among the grass and provide both bed and board for a large population of *satyridae*. This year in June I found two large fields covered with the distorted and swollen remains of *Geranium pratense* L., the Meadow Cranesbill, obviously the result of a successful hormone spray application. I anticipated complete destruction of the *satyridae* larvae and was most pleasantly surprised in July to find these two fields as well populated as the untreated ones. My general impression was that the number of *jurtina* was greater this season than in any of the past eight years.

At the height of the emergence the display of females in the mid morning sun on the occasional clumps of thistles was spectacular, and minor variations in colour schemes and spotting were abundant, but nowhere was an *ab anommata* Verity female to be found, although I have twice recently taken the male in this locality. On 19th June, in blazing heat, I found several rather worn specimens of *Strymonidia pruni* L. enjoying their ninth year as a Surrey introduction. On the 21st *Limenitis camilla* L. made its appearance, in company with the new brood of *Polygonia c-album* L. and *Thymelicus sylvestris* Poda. *Camilla* were even rarer this year than usual, but *c-album* were for a few weeks noticeably more plentiful.

*Aphantopus hyperantus* L. were on the wing in small numbers on 25th June as were a few males of *Argynnis paphia* L., preceding the females by at least a week. *Hyperantus* were about as numerous as usual in those localities which remained undisturbed by agriculture, but varieties, apart from a few *ab arete* Müll., were distinctly fewer in number. *Paphia* continued few and far between and for the first time for seven years I failed to see *valezina* locally. *Argynnis cydippe* L. was only seen once and it seems remarkable that a butterfly so near to extinction in this area still continues to survive in such very small numbers. Such survival presumably carries with it the possibility of sudden great expansion in numbers when all the conditions governing its existence simultaneously become favourable.

After several blank years *Thecla quercus* L. was seen flying in several localities and on 14th July *M. tithonus* L. made its appearance and continued to emerge slowly until the last week in August. I was unable to visit the North Downs until 3rd August, when I found *Lysandra coridon* Poda to be no more plentiful than I had found them to be at Swanage and Worth. *Jurtina* as usual were abundant, but all were very small, while *icarus*, *phlaeas*, and *Eumenis semele* L. were hard to

find, and *pamphilus*, so common usually in late summer, was, and continued to be, comparatively rare for the rest of the season.

The third brood of *phlaeas* almost completely failed to appear and the many fine fields and roadside verges covered with fleabane, ragwort, and knapweed were completely devoid of butterflies throughout September.

Incidentally, the rural countryside now faces a new threat in the shape of industrial magnates with excessively suburban minds. A country lane in this vicinity, which has for years been noted for *phlaeas* on its wide and flowery verges, runs north and south for several hundred yards past the lodge gates of a large estate. Normally, about three feet of these verges would be mown by the local roadman, but this particular section was closely cut right up to the hedges in early September by the new owner of this estate, a tidy minded manufacturer of radio and television sets, and I doubt whether H.P. restrictions will have affected him sufficiently to make him more economical with his labour next year.

The *Nymphalidae* were even more conspicuously absent from the Cranleigh area than last summer. With a garden full of michaelmas daisies and *Sedum spectabile* my biggest count of *Aglais urticae* L. was five on one sunny day in September. The normal state of affairs consisted of one or two daily, together with one very lonely *Vanessa atalanta* L., no *Nymphalis io* L. and no *c-album*; and this in spite of news from Sussex, the Midlands, Durham and the West Country of great numbers of *atalanta* and *urticae*.

On all possible fine days I looked over the local fields of scabious, but these were also deserted and only once did I find half a dozen *c. album* enjoying overripe blackberries. In the absence of other butterflies a very thorough search was made for the larvae of *Apatura iris* L. in eighteen well separated localities, all of which have been fruitful during the past few years. In only four of these areas did I find any at all, though there were very obvious signs that other collectors had preceded me in several particularly good, but too easily accessible spots. In several cases I found eggs, which subsequently hatched, so late that I was prepared to find them infertile. No *iris* were seen on the wing this year. *Thecla betulae* L. was not seen, but occasional searches in the still leafy blackthorn showed that eggs were being laid in spite of the miserable conditions.

The only butterfly that appears to have been unperturbed in any stage by this most deplorable summer has been *Pararge aegeria* L. From early in the season until well into October it has been possible to see successive broods in their usual numbers, and they were particularly noticeable on the fermenting blackberries towards the very end of the season. Looking back through my diary it is apparent that the weather in 1957 was little better than in 1960, and still the butterflies survived, as they doubtless will do again.

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#### CASTOR HANGLANDS NATURE RESERVE EXTENSION

In June 1954, the Nature Conservancy established the Castor Hanglands Nature Reserve in the Soke of Peterborough and a further area was added in September 1955. The present declaration adds 3 acres and brings up its total area to 221 acres. This new area consists of the remainder of the disused limestone pits, which form an important



feature as their limestone vegetation includes a number of species which do not grow elsewhere on the Reserve.

Access to Ailsworth Heath is unrestricted, but permits to visit are required for the rest of the Reserve and to collect specimens of animals or plants, or to undertake research. Applications for permits should be made to the Regional Officer for East Anglia, The Nature Conservancy, Government Offices, Bishopgate, Norwich, NOR.22P. .

## Notes on the Early Stages of *Hypercallia citrinalis* Scop.

By A. A. ALLEN, B.Sc.

Since the rediscovery of this most attractive and rare little moth (better known to many of us under the name *christiannana* L.) on the downs near Wrotham in Kent three years ago, I have had the opportunity of observing fairly closely the latter half of its life-history in captivity—or at all events certain features of it—which may be worth committing to print by reason of the apparent poverty of the early descriptions available in English. These notes, then, are merely intended to supplement such descriptions, and also the recent references to the larva, the very remarkable pupa, and the mode of pupation (Wakely, 1959, *Ent. Rec.*, 71: 34-5; Chalmers-Hunt, *ibid.*: 55).

Of the few larvae I have yet found (all successfully reared without the least trouble) only one was less than half grown at the time; but it sufficed to show that in the younger stage this larva is very different and far harder to recognise than the rather striking and distinctive one into which it later grows. When found (25.v.60)—in its second or third instar, I should judge—it was a darker shade of brown than the older larva, with black head and prothoracic plate, and only the faintest suggestion of any lighter markings—virtually none at all.

When examined on the 29th it was found to have grown considerably, and the head and prothoracic plate now showed obscure traces of lighter longitudinal marks. These two segments, moreover, were narrow in proportion to the rest, a sure sign that change of skin was imminent. In another 15 minutes the larva had undergone ecdysis—the process, unfortunately, was not witnessed—the head and prothorax were now straw-coloured, and darker and lighter areas were faintly visible on the body. In a few hours' time the dark markings of the fore parts, characteristic of the older larva, had developed; but the variegation of the rest of the body proceeded far more slowly, and was not fully attained for perhaps a day or two. This larva was judged to be now about half-size. Although observation entailed some slight disturbance at times, it made no attempt to spin itself up closely for ecdysis, which occurred in the late afternoon. From this stage on, the rate of growth undergoes marked acceleration and maturity is reached in a surprisingly short time—something under a week.

The following is a description of the nearly full-grown larva:—

Ground-colour a rather light coffee-brown. Head and plate of first segment pale ochreous or honey-colour, or slightly green-tinged, these and the anal segment sharply speckled with black; a rather broad dorso-lateral stripe on each side darker, marked on each segment with whitish and becoming broken-up in front; a narrow dorsal line, very uneven and

interrupted on each segment, and wide rings round the black tubercles, dull white; sides below the dark stripe broadly whitish with a line of the ground-colour just below spiracles, and dark again just below the whitish area. Bristles moderate, black at base and then white, longest on head and first and last segments. Legs and prolegs light, narrowly ringed or marked with blackish. Length about 6-7 mm.; linear when fully extended, but fond of resting in a hunched-up attitude which dilates the front segments so that the greatest width is at the second.

As soon as growth is complete the ground-colour changes in a very short time from brown to a decided green, clearest and brightest on segment 2 and becoming duller behind. I have not seen the change actually taking place and think it may usually do so before the larva issues from its spinning for the purpose of pupation. In a matter of hours after this has happened, and after a little wandering at large, it settles down on either a wall or the 'ceiling' of the receptacle and spins a small silken pad for caudal attachment, in the manner of a butterfly larva. In a state of nature one must suppose that a stem or the underside of a leaf is selected; in captivity, the position adopted will obviously vary with the shape or type of container used, but three of my four specimens have chosen the lid of the box so that the pupa is vertically suspended.

The larva is now stretched out flush with the substratum, but attached only by the anal claspers; and may remain about 24 hours thus before pupation takes place, occasionally swaying the fore parts a little from side to side. From a half to one hour before the event the movements increase and the larva projects itself perpendicularly from the surface (to which, of course, it is still fixed by the 'tail')—a position henceforth maintained. Its green colour deepens and it becomes more and more battledore-shaped with the body steadily widening from the rear to the second segment. Irregular jerkings set in after a time, later becoming more regular pulsations. A slit appears in the skin of the second segment (mesothorax) where a maximal tension has been building up, and the pulsations become more evidently wave-like (peristaltic). The slit enlarges, at first slowly and then more quickly, the process being completed in 5-10 minutes. The freshly disclosed pupa is not precisely like the mature one in either colour or shape; it is a duller green, the abdomen more cylindrical. After 20 minutes the final form and coloration are assumed, as follows:—

The pupa is bright clear grass-green with the abdomen duller, lighter, and a shade yellower; squat, stumpy and angular, the face produced and ending in an acute point, the thoracic region curved so that the dorsal outline is concave and the wing-covers bulge strongly; a sharp keel running across the frontal region is continuous with their ventral borders; caudal region very short and blunt, subtruncate; attached by cremaster and projecting from the substratum at something like a right angle; comparatively rigid, the segments apparently allowing of movement in one plane only, as in (e.g.) *Depressaria*. (For a few hours the pale rings round the larval tubercles remain faintly visible in the pupa.)

After some days the colour of the pupa is seen to be duller again—a lighter, whiter green—and the keel edging the wing-cases and girdling the head, and the beak-like face, are whitish. Six days after pupation the eyes begin to darken. From now on, the breast, head,

and wing-covers become progressively whiter, the abdomen losing its green colour only just before the moth emerges. In another six days or so the wing-covers take on a distinct reddish flush which soon condenses into the crimson pattern of the moth's fore-wings, showing through more and more sharply. The bright yellow pigment of the ground-colour of these wings, however, seems to develop much more slowly, since it is visible through the pupal skin only at the very last—and then not strongly, though there is a progressive yellowing as emergence approaches. The latter generally happens from one to two days after the red pattern appears, and in the morning. Pupation, with me, has always been in the afternoon.

Mr. Wakely remarks (*l.c.*: 35) that according to Stainton the larva of *Cnephasia virgaureana* Treits. often occurs in spinnings on the milkwort, but that this had not been the case with him. I can, however, corroborate Stainton's findings in that respect, moreover the spinnings of the two larvae seem indistinguishable. In their young stages, a pale head and black spots on the body indicate the *Cnephasia*; later of course, the differences are accentuated.

## Some Supplementary Notes on the Life History and Breeding of *Apatura iris* Linn.

By R. E. STOCKLEY and I. R. P. HESLOP

These notes are intended to comprise points, under the above heading, not otherwise covered by the material—either published or privately circulated—for the monograph which we are producing, jointly with Mr. G. E. Hyde, on the Purple Emperor butterfly.

For a start, let it be said that if one has the great good fortune to take a pair in cop., the pill-box or other container holding the pair should gently be placed in a cool shady place until separation occurs naturally. Sunshine may cause fluttering, and so premature separation. Similarly, anything in the nature of a journey, or even of movement in a pocket or satchel, is likely to have the same undesirable effect.

The obtaining of eggs from a female in captivity, even when she is otherwise ready to lay, is by no means a routine operation. If a live female is sent by post to an expert colleague for this purpose, she should first be fed on clear honey thinned with water (the use of sugar has fatal consequences), and then be placed in a large pill-box wholly lined, including the glass and the bottom, with butter-muslin. This gives the insect a secure foothold during the journey—otherwise she may be dislodged and fatally battered. The package should be posted "express"; but there is enough air in a large pill-box for 48 hours in fairly cool weather.

On arrival the insect should be fed again. If laying is to be attempted on that day (or whenever laying is to be attempted) it may be found that the addition of a little sherry to the honey and water mixture is both beneficial and encouraging. Rum has been similarly used. It is to be noted that the attractiveness of any feeding substance may be proved at a range of several feet through the uncurling of the proboscis.

The adult female may live in captivity for several weeks (e.g. see *Entomologist*, Vol. 90, p. 187); but she should always be removed from the laying sleeve in the afternoon and not be replaced in it until the following morning. She should be fed every 48 hours, unless she is actually laying, when she should be fed each day.

Opinions have differed generally regarding the conditions of freedom of movement most suitable for *iris* laying in captivity. The method whereby a considerable degree of such is given, e.g. in a netting enclosure over pot-grown bushes, has been tried by I.R.P.H.; but, in all, only four or five eggs have been obtained thereby. The female has the inherent tendency to resort to the lowest point of any containing device.

Substantial success has, however, been obtained by R.E.S. through making actual use of this tendency. The female is placed in a small sleeve on a bush of Sallow (the Broad-leaved species, *S. caprea*, is greatly preferable for this purpose). Sprigs of the plant projecting above the general crown should first be trimmed off; the foliage should then be so arranged as to form a *cup* resting round the lower part of the sleeve. An aim should be to prevent flight while permitting free walking about. Continuous contact with a compact layer of foliage seems to be essential. Laying will usually first be on the lowest accessible leaves.

It is to be noted, however, that some breeders have had success by placing their laying females on bushes or cut sprigs (in water vases plugged round the mouth) inside tubs or other deep receptacles where the only illumination therefore is from *above*.

Before tightening the neck of the laying sleeve round the stem of the plant, the stem should be bound round with bandage so as to provide a thick pad into which the sleeve-tape can imbed itself—a barrier against the passage of earwigs being thus formed.

In captivity the insect lays only between 10 a.m. and 2 p.m. (B.S.T.) and then only when the shade temperature exceeds 65° F. *in the morning*.

Experience seems to vary as to time elapsing between laying and hatching of the ovum. It has been found by I.R.P.H. that the hatch occurs on the 14th day (Wilts stock), and this coincides with the experience of Frohawk with New Forest stock. Working with Sussex stock, however, R.E.S. has found the normal period in ovum to be 21 days. There can be no doubt that there is appreciable difference in some details of life-history as between western *iris* and most other races of this species: in western *iris* there appears further to be a considerably greater degree of adaptability and variation in such respects. The case of 50 days being spent in pupa by a Wilts specimen may be quoted (see paper by I.R.P.H., dated 27th December 1959, relative to certain "ecological consequences", awaiting publication in the *Entomologists' Gazette*). It is probable that these qualities spring from climatic considerations: and the hypothesis may be formed therefrom that if the species were to become extinct in Wilts (as it probably now has at last done in Somerset) it could not be replaced there by stock from other areas. The instance of the northern Oyster may be compared: where, when extinction of the native stock unfortunately occurred, it was found impossible to replace it by means of southern stock of the same species.

The black *dot* on the top of the egg develops soon after laying. The eggs do not turn black until about 48 hours before hatching. After hatching and then consuming the egg-shell, the young larvae wander about restlessly for from eight to ten hours before settling down to normal feeding.

If the young larvae are to be reared on the bush (i.e. the eggs having been laid thereon), it may, as a rough guide be mentioned that one large leaf of Broad-leaved Sallow will suffice for six larvae from hatching to the first moult. After this, of course, the eating rate is greatly accelerated.

If, however, the young larvae are reared in glass-topped tins, it is to be remembered that they must always be supplied with mature leaves. Young leaves are harmful to larvae at any stage except immediately after hibernation. Ova in the natural state are, of course, laid on mature leaves: the young larva is provided by nature with strong jaws (e.g. to eat its way out of the egg-shell).

Both in captivity and under natural conditions the normal proportion of survival from time of laying to the first moult, inclusive, is about 50%, although a few breeders have had a greater proportion of success. The count of eggs on the bush can therefore be misleading. The first exact census of larvae should be made a month after laying: prospects may then be fairly assessed. The point is mentioned because I.R.P.H. once had sold to him (for purposes of an introduction) as "fifty" larvae, what were in fact that number of ova.

Rain can be an enemy of very young larvae reared on bushes in the open. Such a larva can, however, sometimes be protected from rain by means of an inverted glass jar placed over the sprig, provided the branch is stiff enough and the actual leaf in occupation is free from contact. A celluloid container over the sprig would obviously be still better.

*Iris* has been known to go into hibernation after one moult only, but in such case has never survived hibernation. The time of the second moult is normally middle to late September.

Since there has been a mention of some very special provision made for the very young larva, it is appropriate to mention very special provision made for hibernating larvae by a certain Sussex entomologist. He winters his larvae out of doors, but with a piece of metal gauze, crimped round the stem (above and below) to cover each. Complete protection is thus given against birds, whilst there is still permitted the exposure to weather which so many breeders yet hold to be necessary.

This view is not held by I.R.P.H. even for post-hibernation rearing. In the case of indoor rearing, however, regular spraying with water then becomes an obvious necessity—as has been constantly indicated by I.R.P.H. But if such "heavy" weather supervenes after spraying as to inhibit normal evaporation of surplus moisture on the seat leaf or feeding leaf, etc., then recourse must sometimes be had to corners of clean blotting-paper for drawing such moisture off.

The following additional information on spraying, as practised by I.R.P.H., may be found useful. To spray, dip a new tooth-brush in clean cold water and run the thumb-nail along it. Do not spray larvae in a glass-topped tin: if the tin is a proper fit, the regular provision

of fresh-picked leaves is enough to maintain moisture content. Once the larva is put out (during the second instar) on the bush in a cage indoors, spray once a week until April inclusive (except during frost). Spray twice a week normally in May, June and July (remembering that the pupa needs spraying just as much as the larva) until emergence; but in really hot and dry weather, three or four times a week. Do not close the cage or replace the cylinder, as the case may be, until the moisture is off the leaves.

The length of period in the pupa appears to be more readily influenced by conditions of temperature than is the time in any other stage. The flexibility of western stock in this respect has been alluded to above. But even in the case of Sussex stock there would appear to be an extreme range of duration of the pupa stage from 13 to about 26 days (for the latter see *Entomologist's Gazette*, Vol. 6, p. 71) according to the conditions, natural or artificial, to which the pupa is subjected. To attempt to prolong this stage beyond the last figure mentioned would, in the case of this race, probably result in the loss of the specimen.

20th October 1960.

## *Aphantopus hyperantus* L. ab *lanceolata* Shipp + *arete* Müll

By Major A. E. COLLIER, M.C.

In 1951 I had the privilege of looking over the very fine collection of Mr. Woollett of Guildford. Among the many superlative aberrations I was particularly impressed with a most unusual underside of *Aphantopus hyperantus* L. This specimen resembled ab. *arete* Müll. but instead of white spots on the hindwing there was a series of short white streaks, the longest being nearly 2 mm. in length. Examined through a strong glass it was apparent that vestiges of the gold rings still surrounded the white streaks, as indeed I have found to be the case in all the examples of *arete* or of ab. *caeca* Fuchs in my collection. I thought at the time that this beautiful insect must have had both *lanceolata* and *arete* among its antecedents.

In 1954 I became the possessor of a strong strain of *lanceolata* and in that and subsequent years I endeavoured to obtain a pairing between *caeca* or *arete* males and female *lanceolata*. I was very kindly helped with material by Mr. Payne of Wellingborough and Mr. Saunders of Pinner.

For four years I failed to get a pairing owing apparently to a reluctance on the part of either butterfly to recognise the other as of the same species. In 1958, at last, a successful pairing produced a good number of eggs and in 1959 thirty-seven insects emerged, all typical but with very small ocelli. A successful mating produced an F.2 generation of imagines numbering 51, divided into four phenotypes in the following proportions: type, with very small rings, 30; *lanceolata*, poor specimens, but honest, 8; *arete*, 6; *arete* + *lanceolata*, 7. The latter, showing both characters, were very similar to Mr. Woollett's specimen, but the white streaks on the hind wings did not exceed 1½ mm. in length. Efforts to pair brothers and sisters failed, as did attempts to obtain a

mating with *lanceolata*. This was to some extent due to emergences not coinciding very closely, and also to the small amount of material available.

I did, however, succeed in obtaining a fertile clutch of eggs from a union between another wild *arete* and a very colourful *lanceolata* female, and with good fortune may obtain a number of F.2 broods, thus providing plenty of material in 1962 for further investigation into the genetics of *arete* and the combined character.

The proportions of the different phenotypes this year confirmed again the simple recessive character of *lanceolata*, and, at the same time, quite fortuitously and misleadingly, I think, pointed to the same condition in *arete*, which is generally accepted as a multiple factor inheritance.

I have so far failed to get any significant results from *arete* or *caeca*, due either to refusal to lay or to heavy mortality in small broods, but an F.2 brood from an original wild *arete*, and in which both parents were *arete*, produced this year four males and 8 females, all of which were *arete*, which certainly suggests in this case a homozygous condition.

The F.1 generation from an unknown male consisted of 2 male and 5 female *arete*, 1 male *parvipuncta* and 5 type females with small spots approaching *parvipuncta*. There is obviously much to be discovered about the genetics of this not very uncommon aberration, but the results mentioned in this article do suggest that the gene (or genes) responsible for the reduction or near obliteration of the gold rings dominates the gene responsible for the ultra large gold surrounds found in *lanceolata*.

## Collecting in Suffolk, 1960

By S. WAKELY

This year my wife and I decided to go to Suffolk for a fortnight's holiday during August. I consulted Mr. H. E. Chipperfield, of Stowmarket, who suggested Southwold as a place full of entomological interests. Accordingly, we made enquiries and booked up a bungalow in Ferry Road, from 30th July until 13th August. It was a happy choice, and we all (including our dog) had a most enjoyable holiday.

Dr. Dacie and family (from Wimbledon) were staying at Walberswick about a mile away, and on the evening of our arrival he called and showed me how to take *Arenostola elymi* Treits. at flowers of marram grass on the sand dunes in front of the bungalow. At the back of the bungalow were open fields interlaced with dykes and here the M.V. blended light was soon fixed up over a sheet and attracted many of the local species. There was a small patch of Lyme grass near the light, and of course large clumps of this grass were established on the dunes in front of the house, so I was not surprised to find *A. elymi* a fairly frequent visitor to light. Single specimens of *Simyra albovenosa* Goeze, *Apamea oblonga* Haw., *Homoeosoma nebulella* Hb., *Crambus selasellus* Hb., and *Brachmia gerronella* Z. also appeared at light. *Euxoa cursoria* Hufn., one of the commonest noctuids here, was in endless variety.

Other species of note which were taken at light included: *Uerapteryx graminis* L. (fairly common and very fresh), *Eremobia ochroleuca* Esp. (several), *Procus literosa* Haw. (well-marked forms), *Schoenobius gigantellus* Schiff. (a fine pair), *Evergestis extimalis* Scop. (two), *Phycita boisduvaliella* Guen. (six), and *Nyctegretis achatinella* Hb. (seven).

Several visits were paid to Dr. Dacie who was using a M.V. trap in his garden. His captures were much more numerous and varied than mine. As my light was not used after midnight this would partly account for this. He gave me one *E. extimalis* and also three fine *Plusia festucae* L. on one of my visits.

On 31st July, Mr. Chipperfield visited us, and in the evening we both visited Walberswick fen where he showed me where to take *Nonagria neurica* Hb. flying over the reeds at dusk. Only one was taken, which he generously passed on to me. A memory of this visit was seeing vast numbers of noctuids feasting on the flowers of a species of rush. After examining about fifty and finding they were only the common *Leucania impura* Hb. we gave up.

The marram grass was visited at night on several occasions. The flowers of this grass attract lots of moths—especially *E. cursoria*, *A. elymi* and *P. literosa*, but it was noticed that only certain clumps were attractive, undoubtedly due to the condition of the flowers at the time. I tried sugaring the heads after slipping a small rubber band round a handful of stems to bunch them together. This proved a great attraction and saved time looking for the few clumps where the flowers were in the right condition.

Between Southwold and Walberswick is the river Blyth, which can be crossed by a rowing-boat ferry or a little farther inland by a Bailey footbridge. Several visits were made to the salterns in the vicinity of this bridge and by sweeping the *Artemisia maritima* nearby at dusk I obtained a nice series of the local tortrix *Eucosma maritima* Westw. Smoking the plant produced no results whatever—much to my surprise. Masses of Sea Lavender grows on the salterns, and I was rather surprised not to put up any *Agdistis bennetii* Curt. by day, especially as the species swarmed at dusk. The *Limonium* flowers were very attractive to noctuids after dark, but once again *L. impura* predominated.

Sugaring was tried several times and two more *A. oblonga* and a single *Celaena leucostigma* Hb. were obtained by this means. The *A. oblonga* were all very dark and in fresh condition.

When sweeping the *Artemisia maritima* two small larvae of *Malacosoma castrensis* L. were found in the net. It was not until later that I recognised what they were as they were only about a quarter of an inch long. It is a mystery why such small larvae should occur at the beginning of August as they are normally full fed at the end of June. Repeated searches for the nest from which the two larvae came met with no success, as I was not sure of the exact spot. About the same time, on 30th July, Mr. Bretherton reported taking a specimen of the moth at light on the other side of Southwold (*Ent. Rec.*, 72, 197). An attempt was made to rear the larvae, but it failed, and they only survived a few weeks.

During the first week of August a migration of *Syrphidae* (Dipt.)



occurred at Southwold and Walberswick. The flies were coming in from the sea in vast numbers and settled on the sand, as well as on people sunbathing, many of whom were scared, thinking the insects were wasps. This is of particular interest as it coincided with a report by Mr. Spreadbury of a similar occurrence at Seaford in Sussex (*Ent. Rec.*, 72, 199). A very common plant at Southwold is the Fennel and the flowers of this plant attracted the *Syrphidae* in numbers. Large clumps of this plant were growing on the sea wall at the end of Ferry Road, and it was a wonderful sight to see the swallows glide along to these flowers and hover gracefully over them, evidently picking out the particular flies they fancied from among the closely-packed groups on each flowerhead.

During the daytime insects seemed scarce—except for the diptera mentioned—but the numerous species which came to light made up for the dearth of insects by day.

Larvae of *Vanessa atalanta* L. were not uncommon on nettles, but the few I collected were all "stung". One noticeable feature was the abundance of *Homoeosoma cretaceella* Rössl. larvae on ragwort and tansy. Most of these were in the tightly webbed tops of the stems, but in some cases they were in the massed flowerheads. Some moths had already emerged, and I bred a few after the holiday, but it was noticed that parasites had played havoc with them.

A few larvae of *P. boisduvaliella* were found in pea pods of the local *Lathyrus maritimus* at Walberswick.

Dr. Dacie took me on an interesting trip to Thorpness in his car on the 10th, where the foreshore is quite extensive and the variety of plants looked very promising. By smoking some of the herbage we obtained single specimens of *Leucania albipuncta* F., *Platytes alpinellus* Hb. and *Oxyptilus distans* Zell. which gave one the impression that it would be a wonderful district to work with a M.V. light.

Some interesting bugs were seen in numbers on one clump of marram grass one evening. They reminded me of Indian Stick Insects, and have been identified as the local *Chorosoma schillingi* (Schummel).

The weather during the first week was very kind, but sundry thunderstorms and rain lowered the temperature towards the end of our stay and reduced the numbers of insects at light.

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HEODES TITYRUS PODA AT SEAFORD, SUSSEX.—I was recently asked by a keen young collector, whom I have known for some years, to come and see a specimen of *Polyommatus icarus* Rott. whose underside appeared to him to be remarkable.

He had caught it this year in Dorset and had, without thinking, set it upperside as a type male. It was indeed a lovely underside embracing *alba*, *discreta*, *fowleri* and *crassilunulata*, and I undertook the job of reversing the pin. I then noticed, in the same drawer, what I knew to be a common continental copper and asked him where he had caught it. He said that he had taken it on the downs near Seaford in August 1958, and, not being able to place it in Frohawk's Natural History of British Butterflies, had concluded that it must be some sort of aberration.

I showed this butterfly recently to Mr. P. B. M. Allan, who identified it at once as a female *Lycaena dorilis* Hufn. which had only once, in 1870, been recorded in this country. He recommended me, however, to

write to Lt.-Col. W. A. C. Carter to make sure of the latest nomenclature.

This I did, and Colonel Carter very kindly gave me the name *Heodes tityrus* Poda as being, to the best of his knowledge, the latest. The fortunate collector, Christopher Nixon, who was eleven years old at the time, is now at Charterhouse where, I understand, lepidopterists are not discouraged.—A. E. COLLIER, Lynher, Cranleigh. 17.x.60.

## *Coleophora leucapennella* Hubn. in Gloucestershire

By J. NEWTON and L. PRICE

The only record of this species is of a specimen taken by Barrett near Denton on the borders of Norfolk (1891, *Ent. mon. Mag.*, 27: 302) and it is this record which is repeated in Meyrick and subsequent works. It has come as a very pleasant surprise to us therefore, that a number of Coleophorid moths which we collected near Hawksbury in Gloucestershire this year have since proved to be this species. We are indebted to Mr. J. D. Bradley at the British Museum, who has examined the genitalia of both sexes and identified the species for us.

The foodplants given for this species by Meyrick and other authors are *Lychnis viscaria* L. (now called *Viscaria vulgaris* Bernh.), *Silene nutans* L. and *S. inflata* Sm. The first two of these are not recorded for Gloucestershire, and although *S. inflata* is common and generally distributed it does not appear to be in the immediate vicinity of where the moth was located. However, *Lychnis flos-cuculi* L. and *L. dioica* L. are both present, particularly the former, and we think that either or both of these could be the foodplant of the moth here. If this is so, and we hope to confirm it as soon as possible, then there appears to be no reason why this species, if sought for, should not prove to be much more widespread in Britain. It should be looked for in late May and June; it is blackish-brown with a strong white costa, and has a wing span of 16-18 mm., although it appears to be larger than this in flight. It is easily disturbed, flies low, and the males seem to appear considerably earlier than the females.

11 Oxleaze Close, Tetbury, Glos.

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CELASTRINA ARGIOLUS L. IN HAMPSHIRE.—By all accounts this has been a good season for *Celastrina argiolus* L., a species which I had not myself seen for five or six years. Having noticed a number flying round holly bushes in the New Forest on 5th May, I revisited the locality on 14th June and searched the green holly berries for larvae, but without success. However, on 4th October, I found two full-fed larvae on the flower buds of ivy in the very centre of Bournemouth; it was a late date for the larvae (the last time I had found them was on 11th September 1928, even closer to Bournemouth Square) and there had obviously been about a dozen of them. They are exactly the same colour as the ivy buds, but are easy enough to find when one has seen a number of half-eaten buds, for the larva seems to start feeding on a fresh bud before finishing the last.—H. SYMES, 52 Lowther Road, Bournemouth.

PRODENIA LITURA FABR. IN NORFOLK.—On the night of 19th September last, I took in my mercury vapour light here a specimen of this very rare immigrant Noctuid moth.—R. GEOFFREY TODD, West Runton, Cromer, Norfolk. 2.xi.1960.

# The Larva of *Psychomyia pusilla* (F.) (Trichoptera, Psychomyiidae)

By ALLAN BRINDLE, F.R.E.S.

The campodeiform larvae of the Psychomyiidae construct characteristic silken tunnels or tubes on submerged stones or wood. The tubes are attached along their length to the substratum and may extend up to 30 mm. or more but are often shorter since the earlier constructed parts tend to be broken off and washed away. They follow a sinuous course, often taking advantage of cracks in the substratum and are covered with fine particles of sand or other mineral material. In some silted habitats the particles may be of vegetable origin and comparatively large. On pupation a more substantial silken cocoon is formed, more or less strengthened with added material, and this is either located inside the later constructed parts of the tube or completely free.

The larvae of this family may at once be recognised by

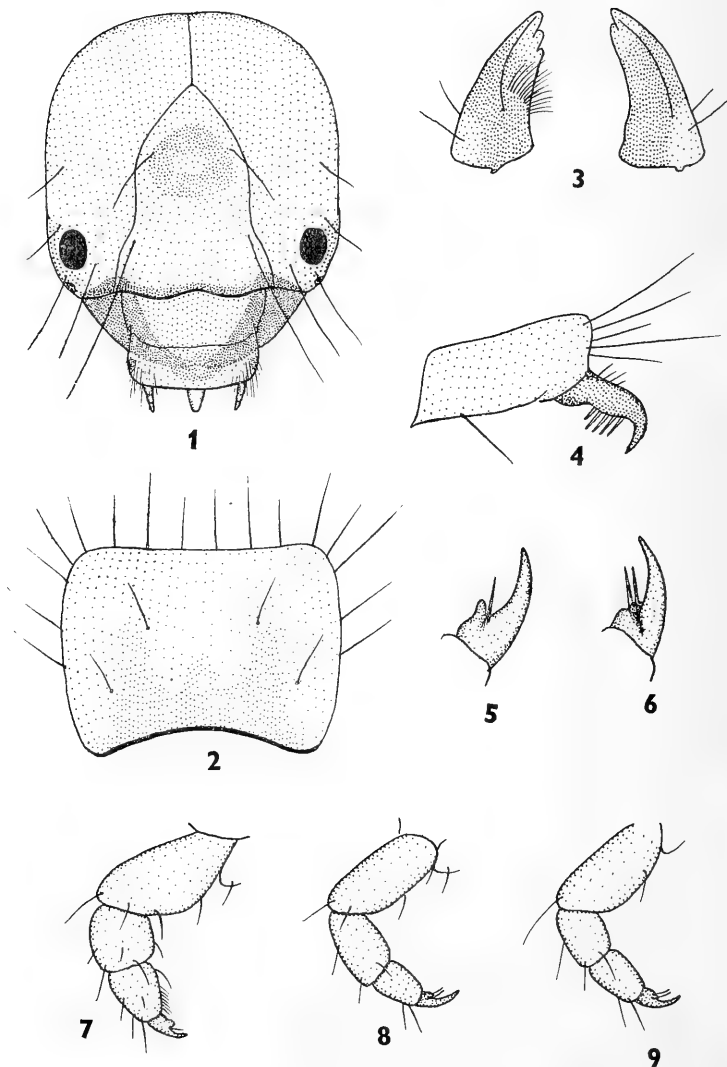
- (1) the construction of the silken tubes, a characteristic confined to this family,
- (2) the very short anal appendages.

With the exception of *Ecnomus tenellus* (Ramb.) all the larvae have the pronotum sclerotised dorsally, and have the meso- and meta-nota membranous and coloured as the abdomen. The head is usually rather quadrangular and the premental lobe of the labium is elongated and more or less pointed, projecting well below the anterior margin of the labrum. There are no abdominal gills.

The larva of one genus of the family, *Metalyse*, Klapalek, with one species, *fragilis*, Pictet, is unknown. The other genera may be separated as follows (partly after Lestage, 1921):—

1. Pro-, meso-, and meta-nota sclerotised dorsally; in tubes on stones in static water, reported to be often associated with fresh-water sponges, in which the larval tunnels may occur ..... *Ecnomus*
- Only the pronotum sclerotised, the meso- and meta-nota membranous ..... 2
2. Head yellow, almost unicolorous, except for a darker area on fronto-clypeus; pronotum yellow darkened on posterior border and slightly on disc; median and hind tarsal claws with two subequal spines; anal claw with five prominent spines ventrally ..... *Psychomyia*
- Head not yellow and almost unicolorous but with extensive dark markings; pronotum uniformly dark or with four subequal longitudinal yellow patches; median and hind tarsal claws with one spine; anal claw without prominent spines ventrally ..... 3
3. Head yellowish with a very broad transverse dark parallel-sided band, the borders of which are straight and clearly defined (the band is usually interrupted at the fronto-clypeal sutures); anal claw without ventral teeth; in tubes on submerged wood in static or slowly moving water ..... *Lyse*
- Head yellow or brownish without such a band but with an irregularly bordered dark area; anal claw with five or six small ven-

tral teeth; in tubes usually on submerged or wet rock or stones, sometimes on wood, in faster running water as a rule, though *T. waeneri* often occurs in static water ..... *Tinodes*



Figs. 1-9. Larva of *Psychomyia pusilla* (F.)

Fig. 1, head, dorsal. 2, pronotum. 3, mandibles, dorsal. 4, anal appendage. 5, tarsal claw, anterior leg. 6, tarsal claw, posterior legs. 7, anterior leg. 8 and 9, posterior legs.

The larva of *Psychomyia pusilla*, the only species in this genus, were obtained from silken tubes constructed on the sides of submerged stones in the river Hodder, near Whalley, Lancs., in May, 1960. The stones lay in small backwaters of the river where the bed was silted; they did not occur where the current was at all perceptible. The adults are very common along the river during the summer, flying freely in the day when the weather is hot and humid.

*Larva* (final instar).

Length 8 mm., breadth 1.5 mm. Head (fig. 1) broad, almost quadrangular, yellowish, unicolorous except for a rather variable darker mark on fronto-clypeus; anterior margin of fronto-clypeus emarginate, darkened; labrum yellow with long setae laterally; labium of usual Psychomyid type with long, pointed premental lobe, both this and the tips of the maxillary palpi projecting below the anterior margin of labrum; antennae reduced, bulbous, near anterior border of head below eyes; eyes prominent, blackish; mandibles (fig. 3) asymmetrical, blackish or reddish-brown, with reddish or yellowish apical and basal parts, scoop-shaped, each with a pair of setae towards external edge, the left mandible with a dorsal row of setae and with three blunt teeth, right mandible dorsally without setae and with two blunt teeth. Pronotum (fig. 2) yellow with darker markings on disc and with actual posterior margin black; quadrangular, anterior corners rounded, posterior corners rather produced posteriorly; a series of long setae on anterior margin and on anterior half of lateral margin; two pairs of long setae on disc. Anterior legs (fig. 7) short, broad, chaetotaxy reduced, tarsi with a row of short setae ventrally, the tarsal claw (fig. 5) with one spine; posterior legs (figs. 8, 9) subequal, longer and not so broad as anterior pair, chaetotaxy similar except for the absence of the short ventral setae on tarsi; tarsal claws with two subequal spines (fig. 6). Abdomen usually reddish dorsally, greenish ventrally, but this was subject to variation in specimens examined; no lateral line or gills. Anal appendages (fig. 4) short, of typical Psychomyid type with five long dark setae distally and one ventrally; claws strongly curved with four short setae dorsally and five spines ventrally, the proximal one shorter than the others.

REFERENCE

- Lestage, J. A. 1921. In Rousseau, *Les Larves et Nymphes Aquatiques des Insectes d'Europe*. Brussels.

## The Larva of *Hydropsyche angustipennis* Curtis (Trichoptera, Hydropsychidae)

By ALLAN BRINDLE, F.R.E.S.

The campodeiform larvae of the Hydropsychidae are found in silken nets under stones in lotic water, and may be distinguished by the presence of much branched ventral gills under the meso- and meta-thorax, and under most abdominal segments. A characteristic feature is the presence of short strong dark spines which occur on the abdomen and elsewhere; the head and thoracic nota are covered with small

spicules, and each thoracic nota has a complete sclerotised plate.

On pupation a weak silken cocoon, in which small pieces of stone or debris are incorporated, is formed underneath a stone in the water.

According to Lestage (1921) and Ulmer (1909), the three British genera of this family may be separated in the larval stage as follows:—

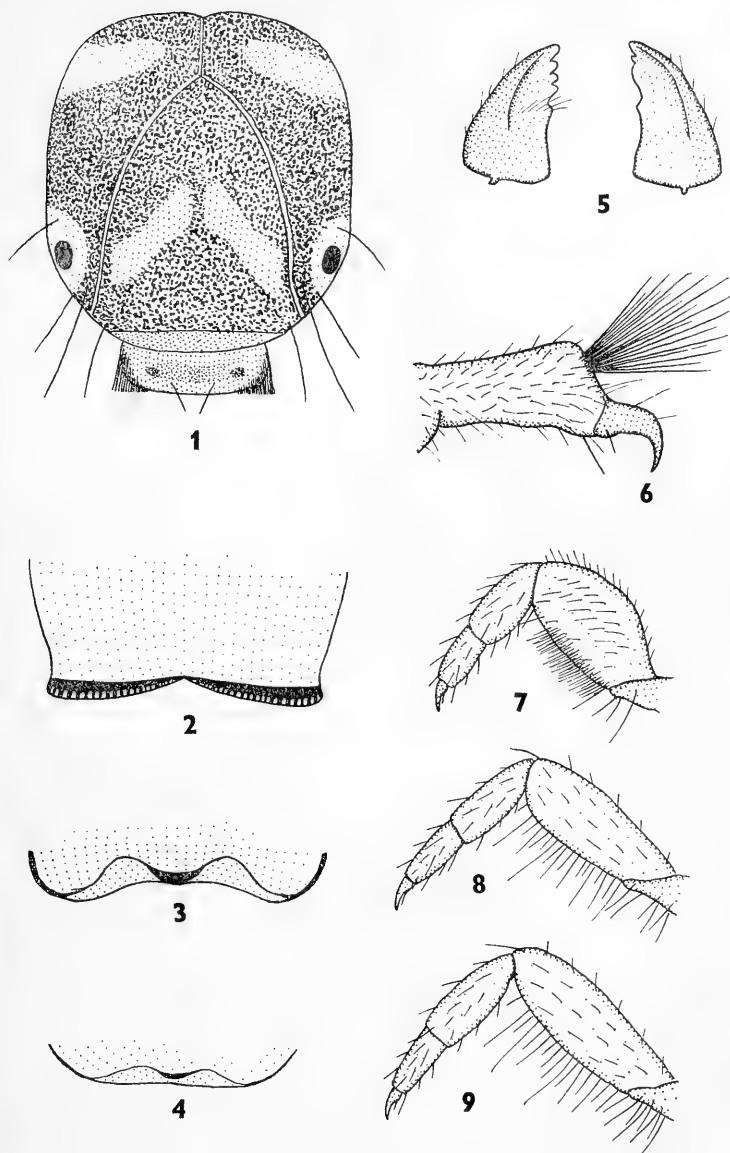
1. Head brown without lighter marks; abdomen gradually broadened to fourth segment and narrowed after; five anal gills ..... *Diplectrona*
- Head with lighter marks; abdomen not broadened; four anal gills ..... 2
2. Mandibles ventrally with proximal tooth largest; right mandible with largest tooth furnished with a dorsal row of setae ..... *Cheumatopsyche*
- Mandibles ventrally with proximal tooth less than the next distal; no dorsal row of setae on right mandible ..... *Hydropsyche*

Only one larva of this family has recently been figured and described in English. This is the larva of *Hydropsyche instabilis* Curtis, described by Philipson (1953). From that species the larva of *H. angustipennis* can be separated by the extent and shape of the light patches on the fronto-clypeus, by the extent of the black borders on the posterior margins of the meso- and meta-nota, and by having ventral gills on the seventh abdominal segment.

Larvae of *H. angustipennis* were collected in large numbers from a swiftly flowing forming the outflow of Virginia Water, Surrey, in July, 1960. The nets made by the larvae correspond to those described for *H. instabilis* by Philipson (1953), being rough elongated silken shelters attached to the underside of stones in the stream from which a net extended into the current. The pupae were found inside silken shelters, incorporating small pieces of stone and debris, attached to the underside of larger stones. The shelters were weak and often the pupae were injured when removing the shelters from the stones. Some yellowish deposit occurred in the water which affected the larval coloration even after removal of the gross material. It is evident therefore that in other habitats the coloration of the larvae may be darker than that described below. It was also noted that in a second habitat where the larval nets were constructed on a vertical rock down which water was flowing, the nets were almost semicircular.

*Larva* (final instar).

Length 17 mm., breadth 2.5 mm. Head (fig. 1) dark yellowish-brown, very rough owing to the covering of small spicules, fronto-clypeus with a  $\Lambda$ -shaped lighter patch, lighter patches on occipital areas. In some larvae the latter patches were only slightly paler than the rest of the head, and young larvae tended to be lighter in colour and generally with the markings larger; eyes surrounded with yellow; antennae indistinct; labrum transverse, darker on disc with dense lateral tufts of blackish fine setae, the points of all forming a horizontal straight edge, disc with scattered black setae and two large setae near anterior border; mandibles (fig. 5) triangular, reddish-brown, left mandible with dorsal brush of setae and five blunt teeth, right mandible without brush of setae and four blunt teeth, external edge of both with short setae.



Figs. 1-9. Larva of *Hydropsyche angustipennis* Curt.

Fig. 1, head, dorsal. 2, pronotum, posterior margin. 3, mesonotum, posterior margin. 4, metanotum, posterior margin. 5, mandibles, dorsal. 6, anal appendage. 7, anterior leg. 8, 9, posterior legs.

Thorax: each nota with a sclerotised plate, yellowish or greyish brown covered with small spicules and all margined with black laterally. Pronotum with black posterior margin (fig. 2), mesonotum with broad black curved median line (fig. 3), metanotum with short black narrow curved line (fig. 4), both meso- and meta-thorax with much branched ventral gills.

Legs: all with a covering of sparse black setae, chaetotaxy as figs. 7-9; anterior legs short, femur very broad with dense black setae ventrally (fig. 7), posterior legs (figs. 8, 9) subequal, longer and more slender than anterior pair, the femora having a row of long unequal black setae ventrally, tarsal claws subequal, short, each with one strong seta.

Abdomen yellowish-brown covered with short black spines, a pair of much branched ventral gills on segments I-VII, each gill arising as one stalk which bifurcates, each bifurcation sending off two or more branches. Some variation in this pattern however occurs. Four anal gills. Anal appendages well developed, distal segment (fig. 6) lightly sclerotised, bearing black setae, with a dense tuft of long brownish setae on distal edge; anal claw yellowish, sclerotised, sharply curved.

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Philipson, G. N. 1953. The larva and pupa of *Hydropsyche instabilis* Curtis (Trichoptera, Hydropsychidae). *Proc. R. ent. Soc. Lond.*, (A) **28**: 17-23.  
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## Some Crane Flies in the Lake District

By R. M. PAYNE

At the end of August I spent a short holiday on the western edge of the Lake District, in Cumberland, and made some observations of the crane flies (Diptera, Tipulidae) that were flying at the time. The favourite hunting ground was along the course of a stream which rises on the open fells at a height of about 350 feet, and for half a mile, flows sluggishly through a spongy *Sphagnum* and cotton grass bog. It then becomes swifter and more rocky, and cascades down through a steep oak wood (250 to 150 feet). After a further short distance, it flows along the edge of a more level and very boggy wood at about 100 feet, and finally descends through some pasture fields to join the tidal river Esk almost at sea level. The whole length of the stream is about a mile.

Amongst a dozen or so Tipulids seen along this stream, the most widespread species was *Limnophila meigeni* Verrall, an attractive fly with its black coloration relieved by yellowish wing bases. This was plentiful on the *Sphagnum* moor, and occurred all along the stream, even down to its junction with the river Esk, though it was perhaps less often seen in the wooded areas.

The only other species noticed on the open moorland was *L. fulvonervosa* Schummel, but at the upper end of the steep wood, where the stream plunged amongst bracken and boulders, *L. aperta* Verrall and *Pedicia claripennis* Edwards were taken.



In the steep wood *Limonia nubeculosa* Meigen, a distinctive fly with heavily mottled wings, was common near the stream, while *Tipula marmorata* Meigen seemed to prefer the vicinity of the huge mossy rocks which were scattered through the wood.

The richest area was the small, very boggy wood where even Wellington boots were not proof against wet feet. On a calm sunny evening the western margin of this wood was alive with fluttering Tipulids—including one very large and conspicuous crane fly whose pursuit was a matter of some excitement. This was *Tipula fulvipennis* Degeer, one of our finest flies, and unusual in the marked difference between the wings of the two sexes. The brown-winged females were the more easily caught as they flew among the long grass at the edge of the wood: the males, with bluish-grey wings, seemed to stay further inside the wood, and flew rapidly up among the trees when disturbed. The smaller *T. scripta* Meigen also occurred in the wood, though less abundantly, while the common pest, *T. paludosa* Meigen, flew about in great numbers at the fringe and in the damp pastures outside the wood. Other species captured in this wood included *L. nubeculosa*, *L. macrostigma* Schummel, *L. modesta* Meigen, *Limnophila meigeni* and *L. nemoralis* var. *quadrata* Edwards.

Another area visited with a net during the holiday was the boggy margin of Devoke water, at a height of 800 feet. Here, in addition to the two moorland species already noted (*meigeni* and *fulvonervosa*), I found *Limnophila squalens* Zett. and *Tipula lateralis* Meigen. *T. lateralis* is, of course, a widespread insect occurring commonly in low-land districts in the south of England.

I was able to spend one day, at rather higher altitudes, on the Old Man of Conistone (in North Lancs.). Here I collected some crane flies on a steep slope above Low Water, at about 1,900 feet. From wet flushes and a rocky stream I took the attractively marked *Dicranota guerini* Zett., *D. exclusa* Walker, *Pedicia straminea* Meigen and *Limonia mitis* var. *lutea* Meigen., as well as *Tipula marmorata* which in my limited experience of diptera seems to be the most ubiquitous of all the larger Tipulids.

## Notes and Observations

EUROIS OCCULTA L. IN CUMBERLAND.—I took a specimen of the pale grey form of this species at my m.v. trap at Bassenthwaite on the night of 21st August 1960. It was evident that there was quite an appreciable migration of this moth in August as the October "Record" carries two other records and it is interesting that all three refer to the western side of the country.—C. I. RUTHERFORD, Redroofs, Oakdale, Harrogate. 23.x.1960.

TWO MIGRANT SPECIES IN THE NEW FOREST.—I took a male *Nycterosia obstipata* Fabr. here on 15th May of this year, a female *Margaronia unionalis* Hübn. on 18th October, and a male of the same species on the following evening. All three species were taken at my mercury vapour light.—L. W. SIGGS, Sungate, Football Green, Minstead, Lyndhurst, Hants. 29.x.1960.

SOME INTERESTING RECORDS FROM SURREY.—On 3rd September, a specimen of *Leucania albipuncta* Fabr. was in my m.v. trap here, while *Herse convolvuli* turned up on 16th and 21st September and on 9th October.

It will be of interest to note that on the morning of 2nd October, I found a specimen of *Lithophane leautieri* Boisd. in my trap: this caused some excitement, and I have reason to believe that this may be the first record of this species from a Surrey locality.

I also took *L. albipuncta* at light at Balcombe, Sussex, on 12th September.—R. FAIRCLOUGH, Blencathra, Deanoak Lane, Leigh, Surrey. 25.x.1960.

THE BLACK WOOD OF RANNOCH.—Being in the neighbourhood of Aberfeldy one week-end this autumn and having a few hours to spare, I took the opportunity to drive over and look at the remnant of the ancient Caledonian forest, so well known to entomologists, which I had not seen since April 1937. The change was a depressing one. When I had last seen the wood, one could wander off the road anywhere into the primeval pine and birch forest. Now, the woods are in the hands of the Forestry Commission, and are fenced off from the road; felling is going on, and the ground beneath the trees is churned up by the tracks of giant tractors; Nissen huts and a sawmill have sprung up. Worse still, the Commission has planted a block of spruce beside the ancient pines!

Naturalists should keep an eye on what is going on here. If there is any piece of ground that should have been under the Nature Conservancy it is the Black Wood of Rannoch. Unfortunately, the Forestry Commission got in first. I may add, as one who drives a good deal around the Highlands of Scotland in the autumn, attending agricultural sales and calling on friends, that the deterioration of Highland scenery in consequence of the Forestry Commission's policy of block planting of spruce and larch, is becoming very marked indeed in many places. It is particularly deplorable that a block of spruce should have been planted right beside the Black Wood of Rannoch.—J. L. CAMPBELL, Isle of Canna.

LITHOPHANE LEAUTIERI BDV. AND OTHER INTERESTING SPECIES AT STUDLAND, DORSET.—On 7th October 1960 I joined Mr. J. L. Messenger in the Swanage area where he had been the two previous nights, having made his headquarters at the Manor House Hotel, at Studland, which provided facilities for running an m.v. trap in the garden. Most fortunately, the night turned out extremely mild. Our first activities for the evening began just before 6 p.m. when we paraded up and down a row of tobacco plants bordering the main road outside Knoll House Hotel. Mr. Messenger had taken a *Convolvulus* Hawk there the previous night and as soon as dusk descended these fine insects began hovering over the flowers. During the subsequent half hour we took four males and one female, all in very good order, but rain began, which seemed to frighten them away. Later on, our portable m.v. apparatus on the heath near the Little Sea attracted some 20 species of which the most noteworthy were *Dasypolia templi* Thunb., *Leucania l-album* Linn. and *Schrankia costaestrigalis* Steph. But it was our trap in the grounds of the hotel which turned up trumps with 24 species, including *Lithophane leautieri* Bdv. The nearest *macrocarpus* was in a gar-

den several hundred yards away. This species had been reported from Swanage and Bournemouth the previous year, so is evidently spreading rapidly in that region. Two *Leucania vitellina* Hüb. were also visitors, as also were seven *Palpita unionalis* Hüb., all in very good condition. This last insect seems to have been unusually common at this period in localities along the south coast.—C. G. M. DE WORMS, Three Oaks, Woking. 6.xi.1960.

THE EARLY HISTORY OF HYPONOMEUTA IRRORELLA HUEBNER IN ENGLAND.—The note published in 1959 (*Ent. Rec.*, 70: 282) with the above title brought me soon after two comments from Mr. Riley. In the first place he pointed out that the references "Surrey", "Coombe" and "Wandsworth" could very well all refer to the same place, since Coombe (now the site of a rather famous golf club) is in the county of Surrey and almost abuts on the metropolitan borough of Wandsworth. "South Street, Wandsworth", where W. Kirby lived, was the northern end of what is now known as Garratt Lane, running from Wandsworth High Street to Tooting. It is barely two-and-a-half miles from Coombe Woods.

Secondly, Mr. Riley questioned the authenticity of "Huebner's type specimen" in the General Collection of the Hope Department at Oxford, it being the accepted view that such of Huebner's type material as still existed, was in the Natural History Museum in Vienna (1935, W. Horn, *Ent. Beih.*, 2). Inquiry of Vienna elicited the reply from Dr. Kasy 'There is no specimen in our collection that could be the Type, yet there are two empty places in which formerly there must have been specimens which have been lost. Perhaps Huebner's Type was one of these. Whether the specimen seen by you [i.e. by me—S.C.S.B.] represents the Type, cannot be settled from here' [translation]. There does remain the interesting speculation, therefore, if the Hope Department specimen is the Type, as to how it got there!

On a recent visit to the Hope Department, I found that the authorities there had withdrawn their claim to possession of the Type, and have removed the label against the specimen in question.—S. C. S. BROWN, 454 Christchurch Road, Bournemouth. 7.xi.60.

CLEPSIS CONSIMILANA HÜB. (=UNIFASCIANA DUP.); A QUESTION OF PABULUM.—There is, I am compelled to think, some mystery about the larval food of this very abundant Tortrix. Privet is its 'official' host, and Mr. Wakely assures me that the larva does indeed occur thereon in due season—he has also found it on ivy and apple—so I do not doubt the correctness of the customary attribution. Yet I am almost sure it is not the whole story. All over our district the moth abounds, showing no special predilection for the neighbourhood of privet but teeming in incredible profusion about elm and hawthorn hedges in particular—sometimes far from any privet. Having collected and reared Tortrix larvae at random from the common trees and shrubs in this area since 1955 I have been puzzled at the non-appearance of *consimilana* in my boxes until this year; and when at last it did turn up, the circumstances gave still more cause for surprise. On different dates in late April I found three rather long and slender yellow-headed brown 'micro' larvae in dry dead grass-litter at the base of a fence in my garden, and set them up in a tube with a supply of the pabulum—fully expecting them to produce some rubbish-feeding member of the Tineina. One died,

but the two larger continued to devour the litter for 2-3 weeks, producing copious webbing and frass and growing very slowly. They eventually pupated amongst the material and in the second half of May a typical male and female *consimilana* emerged—about the last species I was expecting! Near the spot where the larvae were found there is apple, rose, sycamore, bramble, etc., but the nearest privet is a small hedge some 50 yards away, with which I have never been able to connect the species at all definitely. Perhaps the larvae had come from apple trees nearly overhead and hibernated in the litter, feeding on it only when unable to return to the apple to complete their growth.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 18.xi.60.

**CRAMBUS CONTAMINELLUS HÜBN. SURVIVING AT BLACKHEATH; AND ITS RESTING ATTITUDE.**—It is worth noting that the uncommon grass-moth *Crambus contaminellus* Hübn. still exists in this suburb, a well-known locality for it in early times. Barrett (1905, *Brit. Lep.*, 10: 111) wrote, "... very local, and most frequently found upon the coast, yet has long been known to occur at Blackheath in the outskirts of London". In Grinling *et al.*, 1909, *A Survey and Record of Woolwich and West Kent*, the only notice of it—by J. W. Tutt—is as follows: "Local—Blackheath, formerly, recent records wanted". It occurs here at light from mid-July to mid-August, but most sparingly, and only by odd specimens; I have never had as many as two in a night.

When basking in the rays of the lamp it often sits with the body tilted over to one side, in an attitude reminiscent of that adopted by some of the robber-flies (Asilidae) on alighting, but not (as far as I have seen) by the common species of *Crambus*. This, however, is not invariably the case. When resting by day, to judge from a captured specimen observed for some time, the moth appears to take up a different posture; there is then no lateral inclination, but the fore parts are flattened against the substratum while the rear projects outward from it at an angle of about 30°. The whole effect, with the narrow forewings wrapped tubularly round each other, is an exceedingly good imitation of a dry brown broken-off hollow stem of grass. This likeness, of course, is shared to a varying extent by most species of the genus when at rest, but those I am acquainted with do not sit with the hind parts raised. *C. contaminellus* must enjoy a high degree of immunity from daytime enemies, considering too that it is one of those which cannot normally be put up—a circumstance contributing, no doubt, along with its dingy and unattractive aspect, to its apparent rarity. Mr. Wakely tells me he has taken it not uncommonly (always at light) in two or three suburban Surrey localities—Herne Hill, Norwood Golf Course, etc., besides Byfleet—and has noticed its characteristic resting attitude.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 18.xi.60.

**SCATOPSIDAE (DIPT.) REARED FROM A WASP'S NEST.**—From a nest of a wasp, *Vespula* sp., found on Bookham Common, Surrey, Mr. S. Wakely bred two species of Scatopsidae on 5th October 1951. One, *Scatopse notata* L. was already known as occurring in wasp's nests for in 1936 A. Collart included this species in his list of diptera reared from wasp's nest in *Bull. Musée roy. d'Hist. nat. Belg.*, 12: 1-12. The other species was *Scatopse bifilata* Walk. The latter is also an addition to the list of 1026 species of diptera (1950, 1960, *Lond. Nat.*, 29, 39)

that have been found at this National Trust property of Bookham Common which has recently been scheduled as a Site of Special Scientific Interest by the Nature Conservancy.—L. PARMENTER, 97 Fairlands Avenue, Thornton Heath, Surrey. 24.x.1960.

MIGRANT SYRPHIDAE IN THE ISLE OF WIGHT.—Mr. K. Davison of the Birmingham Field Naturalists' Club, who is a competent observer, was on holiday at Shanklin during the last two weeks in July and witnessed a large migration of Syrphidae.

Mr. Davison tells me that they flew in from a south-easterly direction and were in 'countless thousands'. It was necessary to close the hotel doors and windows against the invaders. He tells me that after the arrival of the insects, they had two and a half days of unceasing rain. This may not be cause and effect.

He brought me four specimens. They are all *Syrphus luniger* Mg., one male and three females.—CARTWRIGHT TIMMS, 524 Moseley Road, Birmingham 12.

TACHINIDAE (DIPT.) REARED.—In a small collection of diptera given to me by Mr. R. L. E. Ford were four males and six females of *Tachina larvarum* L. bred in July 1954 by the late H. D. Swain from larva of *Philudoria potatoria* L. and a female *Tachina sorbillans* Wied., also bred by Mr. Swain, that emerged on 2nd June 1944 from a larva of *Saturnia pavonia* L. from Crowthorne, Berks.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

VOLUCELLA ZONARIA PODA (DIPT., SYRPHIDAE) IN ESSEX, KENT AND ISLE OF WIGHT.—This species was seen in Wanstead, Essex, by Mr. E. E. Syms on 28th September, and Mr. R. L. E. Ford reports it at Bexley, Kent, on 1st August and on *Buddleia* flowers at Ventnor, Isle of Wight, on 22nd August of this year.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey. 24.x.1960.

A CASE OF ABNORMAL PAIRING IN THE SYRPHIDAE (DIPT.).—Recently my friend Mr. D. Collins showed me a pair of Syrphid flies which he had taken *in cop.* at Kew Gardens in May of this year, and which he had seen to belong to different genera. The male was the well-known and variable narcissus-bulb fly, *Merodon equestris* F. (typical form); the female was *Criorrhina floccosa* Meig., a species which passes its earlier life in rotten wood and is not uncommon in suitable areas. Except that both are bee-like, and about the same size, they are not really very similar. They are, moreover, placed in different subfamilies, Eristalinae and Xylotinae (Milesinae, Verrall) respectively. It is likely that such cases of abnormal pairing are already on record for Diptera, as they are for Coleoptera and doubtless other orders.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 19.xi.60.

#### COED RHEIDOL NATIONAL NATURE RESERVE EXTENSION

Coed Rheidol Nature Reserve, near Devil's Bridge in Cardigan-shire, was established in 1956. Further areas were added to the Reserve in 1957 and 1958 and under a new declaration some 9 more acres of woodland are now brought into it, including Sessile Oak woods on the West Bank of the Afon Rheidol below the village of Ystum Tuen. The Reserve now covers an area of 89 acres.

Much of the area is inaccessible and includes precipitous cliffs

forming part of the spectacular Rheidol Gorge, which can be viewed from the village of Devil's Bridge. Coed Rheidol is an interesting example of a moist, mossy Sessile Oak wood with a rich associated flora and fauna which have developed under conditions of high humidity and heavy rainfall.

Permits will be necessary for those who wish to collect specimens of animals or plants, undertake research, or to visit parts of the Reserve away from the footpath. Applications for such permits should be sent to the Regional Officer for South Wales, The Nature Conservancy, c/o Department of Zoology, University College of Swansea, Singleton Park, Swansea.

---

### COOM RIGG MOSS NATURE RESERVE

Coom Rigg Moss is an excellent example of a relatively undamaged blanket bog. Bogs of this type were at one time widespread in Northern England but most of them have been severely damaged or completely destroyed by draining, burning and grazing. The Reserve, which has been established under a lease from the Forestry Commission and covers 88 acres, is about 1,050 feet above sea level and lies about 10 miles west of Bellingham and about the same distance north of Haltwhistle, Northumberland. It is within the boundaries of the Northumberland National Park.

Coom Rigg Moss possesses an actively growing and apparently undamaged *Sphagnum* cover, and this constitutes its major scientific interest. *Sphagnum papillosum* and *Sphagnum magellanicum* are the main components of the *Sphagnum* carpet and the usual associates of this type of bog—Common Cotton-grass, Hare's-tail, Ling, Cross-leaved Heath, Cranberry, Deer Grass, Bog Asphodel and Round-leaved Sundew—are abundant. The presence of *Sphagnum imbricatum*, *Sphagnum fuscum*, Marsh Andromeda and Mud Sedge suggest an exceptional freedom from human interference. Great Sundew, now a rare species in Northumberland, is well represented and therefore of special interest.

Permits will be required to visit, to collect specimens of animals or plants, or to undertake research. Applications for such permits should be made to the Regional Officer for the North, The Nature Conservancy, Merlewood Research Station, Grange-over-Sands, Lancashire.

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### SOCIAL INSECTS

The fourth congress of the International Union for the Study of Social Insects is being held in the historic Italian city of Pavia from 9th to 14th September 1961. It is being organised by the Italian section of I.U.S.S.I. under its president, Prof. Carlo Jucci.

The programme includes sections on "bees and wasps", "termites" and "applied research", and symposia on "endocrinology", "caste differentiation", "symbiosis" and "gregarism and subsociality". Contributions are invited. The proceedings of the Congress will be published.

Application forms and information are available from W. V. HARRIS, c/o Natural History Museum, London, S.W.7. Those concerning the submission of papers must be returned to Pavia not later than 31st March, but applications for membership will be received up to 30th April.

A short post-congress excursion to a high altitude research station in the Apennines is under consideration.

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## EXCHANGES AND WANTS

*For Sale.*—Entomological Cabinets, all sizes, due to change over to unit system. Details on application. Easy payments if required. R. W. Watson, "Porcorum", Sandy Down, Boldre, Near Lymington, Hants.

*For Exchange.*—"Field Lepidopterist", Tutt., 3 Vols. "British Moths", Morris, 4 Vols., 1891. "Tineina", Stainton, 1854. "British Tortrices", Wilkinson, 1859. Also wanted: Storeboxes, 13 × 9 or 14 × 10. Cartwright Timms, 524 Moseley Road, Birmingham, 12.

*Wanted.*—15 to 20 large-drawer Mahogany Cabinet. Brady or Gurney preferred. H. N. Moon, "Budleigh", 319 Coniscliffe Road, Darlington.

*Orthoptera.*—Crickets of the subfamily Gryllinae (except domestic Species) and grasshoppers of the subfamily Pyrgomorphinae from all parts of the World required in any quantity for research work in morphology, taxonomy, cytology, and experimental biology; dry or fluid preserved or living. Please contact D. K. Kevan and R. S. Bigelow, Department of Entomology, McGill University, Macdonald College, Quebec, Canada.

*Wanted.*—Records of *Lathridius* spp. (Coleoptera Lathridiidae) especially *L. bifasciatus* Reitter, with locality, date, and if possible details of habitat. E. Lewis, 8 Parry Road, London, S.E.25.

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## RECORDS OF THE BRITISH ZYGAENIDAE

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I have in preparation a paper on the distribution of the species of *Zygaena*  
and *Procris* found in the British Isles, with maps showing the geographical  
range of each species in these islands. I would welcome authentic records,  
especially from Ireland, Scotland, Wales and South-West England. Records of  
*trifolii* (both the early May-June subspecies and the July-August subspecies) and  
*loniceræ* would be of special interest, including any from southern England,  
as here the range of the two species overlaps. As these species, *trifolii* and  
*loniceræ*, are sometimes difficult to separate, I shall be pleased to determine  
any doubtful specimens, which should be sent to me by 31st December, 1960.

---

W. G. TREMEWAN,

Dept. of Entomology, British Museum (Nat. Hist.), Cromwell Road, London, S.W.7.

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# THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

The following gentlemen act as *Honorary Consultants to the magazine*:  
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FONSECA, F.R.E.S.

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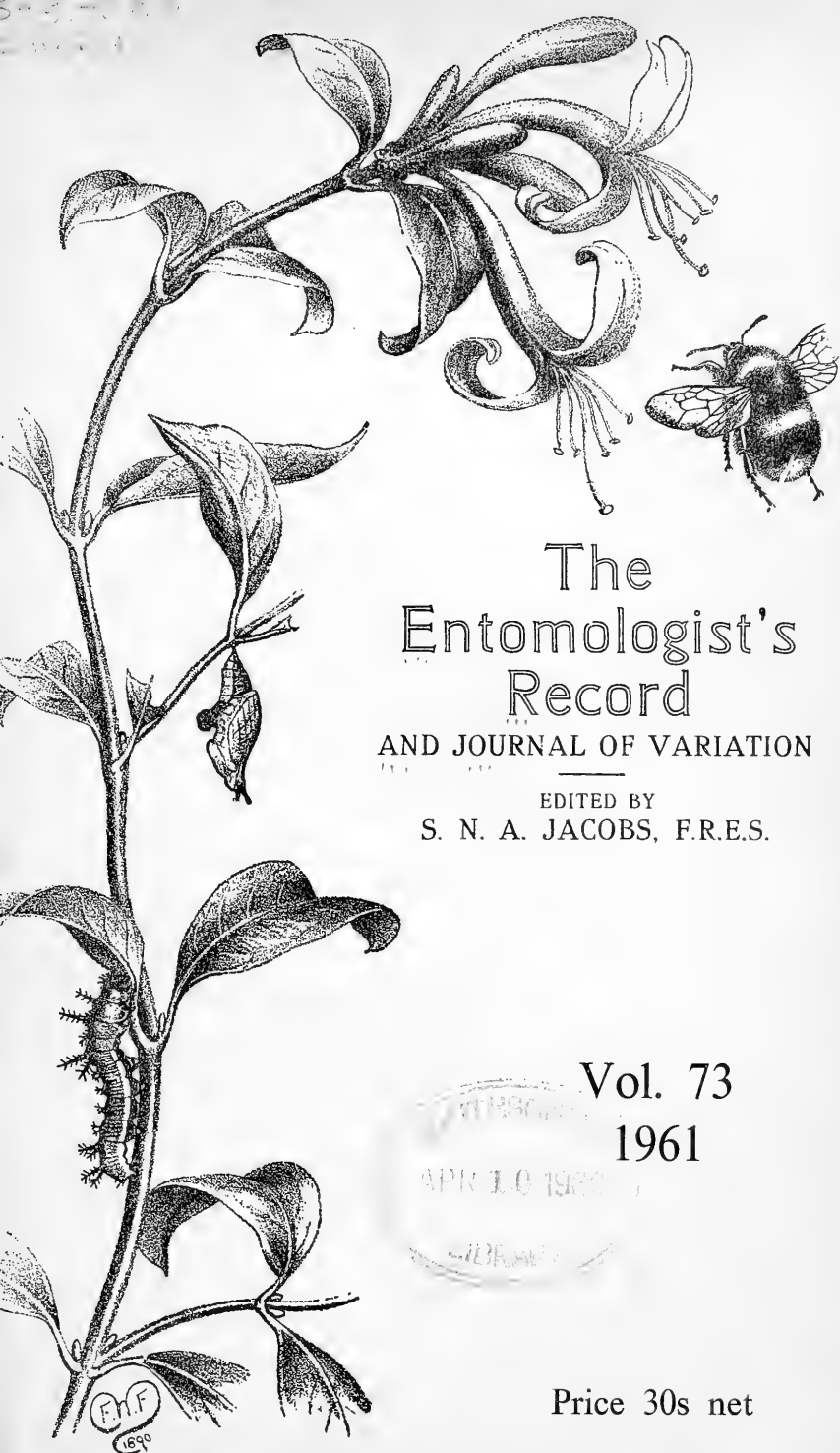
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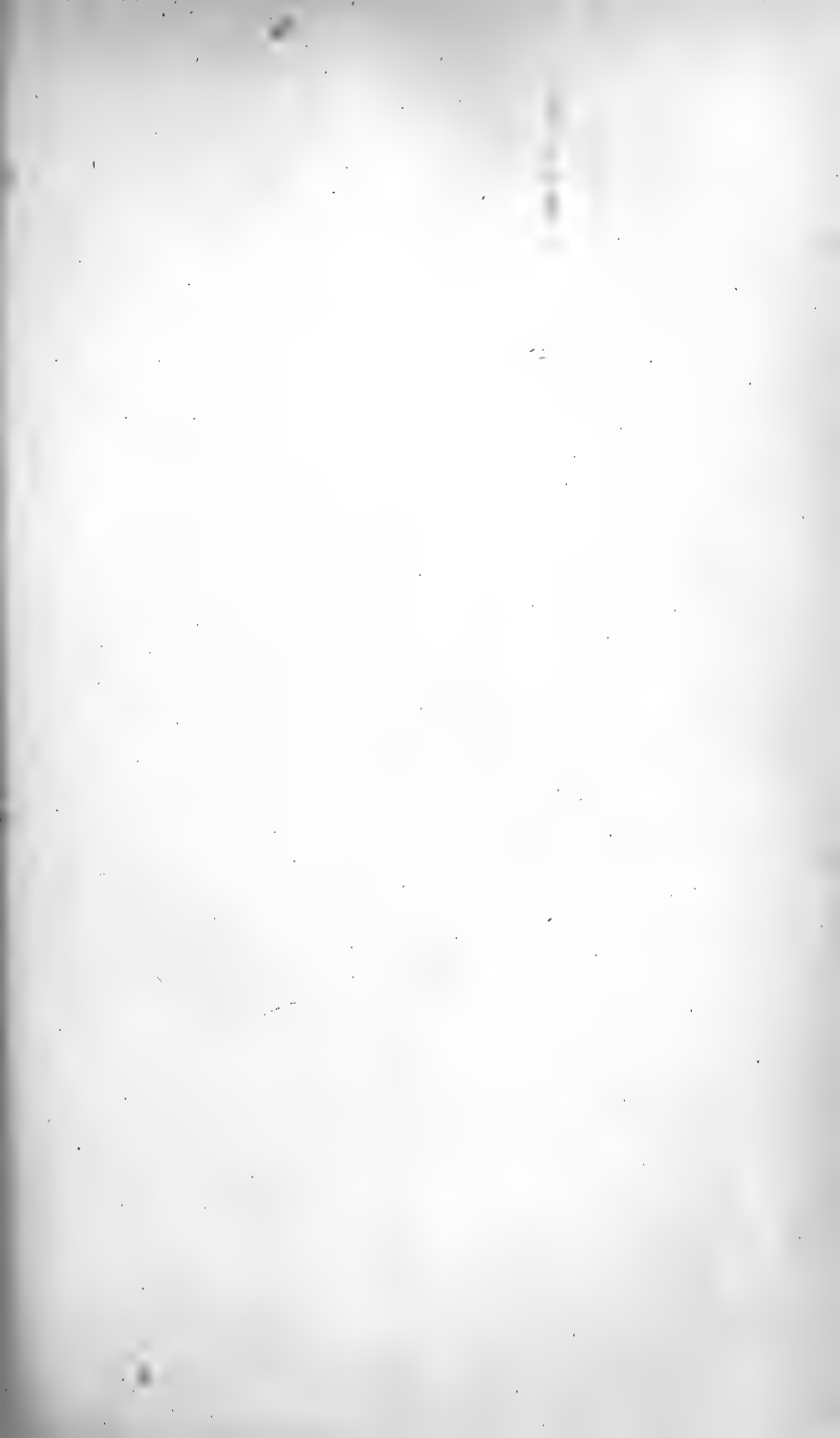
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# Notes on *Zygaena* Species, with descriptions of New Subspecies from Spain (Lepidoptera, *Zygaenidae*)

By W. G. TREMEWAN,

Department of Entomology, British Museum (Natural History)

The following notes and descriptions of new subspecies are based on a small collection of *Zygaena* collected during the summer of 1960 in South-West France and Spain by Col. and Mrs. W. B. L. Manley.

## ***Zygaena sarpedon* Hübn. ssp. *rianoica* ssp. nov.**

♂ 25 mm. Head black, thorax black, with a mixture of whitish hair; abdomen black with a scarlet belt. Forewings greyish- or greenish-black; spots scarlet, 1 and 2 confluent, spot 3 present but small, spot 4 large and joined to spot 5 by a scarlet bar, 5 large and diffusing towards the apex. Hindwings scarlet with a wide, black terminal border terminating just before the tornus. Cilia of forewings brownish-black; cilia of hindwings black. Both the fore and hindwings are thinly scaled.

♀ 27-30 mm. Coloration similar to that in the male, but the thorax more strongly covered with whitish hair; hindwings with narrower terminal border.

Holotype ♂ "Riano, Leon, 3650 ft.: 27.6.1960, W. & M. Manley".

Allotype ♀ with similar data but dated "15.7.1960".

Paratype: 1 ♀ with the same data as the holotype.

The holotype, allotype and paratype in collection W. B. L. Manley.

## ***Zygaena sarpedon* Hübn. ssp. *hispanica* Rambur**

*Zygaena sarpedon* var. *hispanica* Rambur, 1858, Cat. Syst. des Léps. de l'Andalousie, p. 167.

A series of seven specimens was taken on the Sierra de Alfacar, 4,500 ft., 6-11.vii.1960.

There is considerable confusion concerning the type locality of *hispanica* Rambur. Unfortunately Rambur's citation "Andalousie" covers a large area. Reiss (1930) considered Andalusia and Castile as the type locality and illustrated specimens from Granada. This locality is again quoted in a later work (Reiss, 1936). Contrary to the opinion of Reiss, Marten (1957) considered San Fernando, Cadiz as the type locality. Perhaps an examination of Rambur's type would solve the problem.

## ***Zygaena sarpedon* Hübn. ssp. *zapateri* Reiss**

*Zygaena sarpedon* ssp. *zapateri* Reiss, 1936, Ent. Rdsch., 54: 57, pl. 2, figs.

Two males of this subspecies were taken on 2 and 9.vi.1960 at Santa Croce, Teruel, at 3,300 ft. Reiss described *zapateri* from the neighbourhood of Albarracin.

***Zygaena contaminei* Boisd. ssp. *peñalabrica* Fernández**

*Zygaena peñalabrica* Fernández, 1929, Mem. Soc. esp. Hist. nat., 15: 599, figs. 8, 9.

*Zygaena contaminei* ssp. *asturica* Reiss, 1936, Ent. Rdsch., 54: 59, pl. 2, figs.

Three specimens of this interesting subspecies were taken on 24.vii.1960 at Puerto de Piedras Luengas, Palencia, at 4,200 ft. Two of the specimens, a male and a female, have traces of a red abdominal belt; this form is ab. *cingulata* Frndz.

In a catalogue of the type specimens in the British Museum (Natural History) of the genus *Zygaena* F. (now in manuscript) (Tremewan, 1961) I have placed *peñalabrica* Frndz. as a subspecies of *contaminei* but stated that further specimens were required to ascertain the subspecific status with certainty. Fernández described *peñalabrica* from specimens captured at Peña Labra, a mountain which lies on the border of Santander and Palencia. The three specimens taken by Col. Manley at Puerto de Piedras Luengas are of the same race and I now consider *peñalabrica* to be a good subspecies. In 1936, Reiss described from Treviso and La Liebana a subspecies of *contaminei* Boisd. which he named *asturica*. These localities are approximately 20 miles from Peña Labra and in my opinion *asturica* is synonymous with *peñalabrica* Frndz. I have not, however, compared the type of *peñalabrica* with the type of *asturica* to confirm this opinion.

It has been suggested to me that the status of *peñalabrica* is infraspecific (Reiss, *in. lit.*). Fernández cited the name as follows:—"Zygaena peñalabrica f. nov." but according to the text he compares it with *Z. contaminei* Boisd., which is a good species. He also stated "besides being inclined to believe that it is a good form referable to *contaminei*, that it also appeared to him quite probable that it is a veritable new species". Fernández also described aberrations of *peñalabrica*; an example is cited as follows:—"Zygaena peñalabrica ab. semiconfluens n. ab." Further, in the legend to the text figures he undoubtedly cites it as a species as follows:—"Fig. 8 y 9: Zygaena peñalabrica Fernánd., ♂, tipo (fig. 8); ♀ (fig. 9)". From the implications of the text I conclude that Fernández considered *peñalabrica* a species and not an aberration.

Koch (1948) has placed *contaminei* Boisd. as a subspecies of *sarpedon* Hübn. This is incorrect as the genitalia have good and different characters which separate them into two distinct species. Following his own conclusions, Koch incorrectly placed *asturica* Reiss as a subspecies of *sarpedon* Hübn.

Agenjo (1948) correctly placed *contaminei* ssp. *asturica* Reiss as a synonym of *contaminei* Boisd. ssp. *peñalabrica* Frndz.

Later, in an obituary to the late Fernández, Agenjo (1954) referred to the above-mentioned papers of Koch and himself but placed *peñalabrica* as a subspecies of *sarpedon*, presumably following the opinion of Koch. Once again *asturica* Reiss is placed as a synonym of *peñalabrica* Frndz.

As I mentioned above, *asturica* Reiss is a synonym of *peñalabrica* Frndz., which must be considered a subspecies of *contaminei* Boisd. I have compared the genitalia of the types of *contaminei* Boisd. and *peñalabrica* Frndz. and found them to be conspecific.



**Zygaena fausta** L. ssp. **margheritae** ssp. nov.

♂ 24 mm. Head black, thorax black with two, whitish, dorsal stripes and an orange-vermilion collar, abdomen black with a vermilion belt on segments 5-7, segment 8 black with the valvae vermilion. Forewings black with spots orange-vermilion. Spots 1 and 2 confluent, outwardly edged with light yellow. Spots 3, 4, 5 and 6 confluent by the narrow surrounding rings which are light yellow in colour. Hindwings vermilion, with a narrow, black, terminal border. Cilia of forewings grey; cilia of hindwings black.

♀ 26-28 mm. Coloration similar to that in the male, but vermilion abdominal belt confined to two segments only. The whitish dorsal stripes on the thorax are more strongly marked. In one female (the allotype) the hindwings are vermilion tinged with orange.

Holotype ♂, "Riano, Leon, 3650 ft., 19.7.1960, W. & M. Manley".

Allotype ♀ with the same data as the holotype.

Paratype: 1 ♀ with the same data as the holotype.

The holotype, allotype and paratype in collection W. B. L. Manley.

Compared with ssp. *preciosa* Reiss from Albarracin, ssp. *margheritae* is a larger race with the thorax and abdomen more strongly marked with white while the red coloration is brighter. Confluence of the spots is not so extreme in ssp. *margheritae* which is nearer to ssp. *junceae* Obthr. from Vernet-les-Bains.

**Zygaena fausta** L. ssp. **fortunata** Rambur

*Zygaena fausta* ssp. *fortunata* Rambur, 1858, Cat. Syst. des Lép. de l'Andalousie, p. 172.

A short series of this subspecies, three males and two females, was taken at La Rochebeaucourt, Charente, 29.v.1960.

**Zygaena hilaris** Ochs. ssp. **leonica** ssp. nov.

♀ 26 mm. Head black, thorax black with white collar, abdomen black. Forewings black, with spots dull vermilion, all spots confluent, forming a pattern similar to that in ssp. *escorialensis* Obthr. Hindwings dull vermilion with narrow, black, terminal border. The three black "spots", which are the remaining areas of the black ground colour of the forewings, are narrowly edged with light yellow.

Holotype ♀, "Riano, Leon, 3650 ft., 27.6.1960, W. & M. Manley," in collection W. B. L. Manley.

Compared with ssp. *escorialensis* Obthr., ssp. *leonica* is larger, with the red coloration darker compared with the light pink spots and hindwings of the former subspecies.

I would normally hesitate to describe a subspecies from a single specimen, but in this example there can be no doubt about its subspecific status. Apart from the wing pattern, which is similar to that in ssp. *escorialensis* Obthr., it is unlike any other known Spanish race of *hilaris* Ochs.

**Zygaena loti** S. & D. ssp. **pardoi** Agenjo

*Anthrocera achilleae* ssp. *pardoi* Agenjo, 1953, Graellsia, 11: 2.

This subspecies was described from Torrelavega, Santander (Picos de Europa).

A series of nine specimens was taken at Puerto de San Glorio, Santander, at 4,800 ft., 11-26.vi.1960, and two further specimens at Riano, Leon, 3,650 ft., 29.vi and 17.vii.1960. One of the two females is partially confluent.

This subspecies can be compared with ssp. *tristis* Obthr. from Cauterets, Hautes Pyrénées, but the specimens of *pardoi* are more thickly scaled, the colours are stronger and brighter and the spots are larger. The thorax and abdomen of *pardoi* are glossy blue-black compared with *tristis* which has the thorax and abdomen covered with dull black hair.

**Zygaena rhadamanthus** Esp. ssp. **manleyi** ssp. nov.

♂ 30-32 mm. Head black, thorax black with whitish hair, abdomen black with a narrow, scarlet belt. Ground colour of forewings blue-black or black with a blue lustre, dusted with grey scaling. Spots bright scarlet, confluent in pairs, spots 2 and 3 outwardly edged with black, spots 4 and 5 laterally edged with black. Hindwings scarlet with a narrow, black, terminal border, widening at apex.

Holotype ♂, "La Pena, Huesca, 2400 ft., 30.5.1960, W. & M. Manley".

Paratypes: 3 ♂♂ with the same data as the holotype.

The holotype and 2 paratypes are in collection W. B. L. Manley; 1 paratype in collection British Museum (Natural History).

**Zygaena rhadamanthus** Esp. ssp. **manleyi** Trmn. ab. **aciculata** ab. nov.

Two males of this new subspecies have no trace of the abdominal belt, the abdomen being completely black.

Holotype ♂, "La Pena, Huesca, 2400 ft., 30.5.1960, W. & M. Manley".

Paratype: 1 ♂ with the same data as the holotype.

The holotype and paratype are in collection W. B. L. Manley.

It is probable that there is great variation within this subspecies as one specimen has spot 1 extended along the costa and reaching spot 3, while the latter is extended along the costa, almost reaching spot 5. Compared with ssp. *alfacarensis* Reiss, ssp. *manleyi* differs by its more brilliant scarlet and the rather darker ground colour of the forewings.

**Zygaena rhadamanthus** Esp. ssp. **aragonia** ssp. nov.

♂ 23-28 mm. Head black, thorax black covered with thick, whitish hair, abdomen black with vermilion belt. Forewings black, strongly dusted with greyish scaling around the spot area. The grey scaling extends almost to the apex, leaving a narrow terminal border of the ground colour. Spots vermilion, confluent in pairs, spots 2 and 3 outwardly edged with black, spots 4 and 5 laterally edged with black. Hindwings vermilion, with extremely narrow, black, terminal border. Cilia of forewings light brown; cilia of hindwings black.

♀ 26-30 mm. Coloration similar to that in the male but thorax more strongly covered with whitish hair. Greyish-white scaling of forewings stronger and more intense. Hindwings lighter vermilion, terminal border almost absent and with traces of same only at the apex. Cilia of forewings light brown; cilia of hindwings black.

Holotype ♂, "Aragon Albarracin, m. 1100, 8.vi.24, Querci".

Allotype ♀ with similar data but dated "10.vi.24".

Paratypes: 26 specimens with similar data to the holotype but dated as follows:—2 ♂♂ and 1 ♀, "6.vi.24"; 3 ♂♂, "7.vi.24"; 3 ♂♂ and 5 ♀♀, "8.vi.24"; 2 ♂♂, "9.vi.24"; 2 ♂♂ and 1 ♀, "10.vi.24"; 4 ♂♂ and 1 ♀, "12.vi.24"; 1 ♀, "16.vi.24"; 1 ♀, "25.vi.24".

The holotype, allotype and 26 paratypes are in the collection of the British Museum (Natural History).

There are 10 further paratypes in collection H. Reiss, Stuttgart, with data as follows:—3 ♂♂ and 1 ♀ "Albarracin, Juni 1917 leg. Faller, Freiburg"; 1 ♂ "Albarracin, Val de Vega, Juni 1930, 1050 m. leg. Faller, Freiburg"; 3 ♂♂ and 2 ♀♀ "Arag. Albarracin, Predota 1929. 2.6."

Reiss (1930), due to an insufficient number of specimens, stated that *rhadamanthus* from Albarracin varied little from ssp. *alfacarensis* Reiss from the Sierra de Alfacar. However, according to the series in the British Museum from Albarracin, this is not correct. Compared with ssp. *alfacarensis*, ssp. *aragonia* has the forewing spots constantly confluent in pairs, while the forewings are dusted with grey scales. In *alfacarensis* this grey scaling is absent and the spots are nearly always separate. The thorax of *alfacarensis* is black with only a few whitish hairs, but in *aragonia* the thorax is thickly covered with whitish hair.

The Albarracin subspecies has a strong resemblance to ssp. *grisea* Obthr. from Digne, Basses Alpes, but in ssp. *aragonia* the red abdominal belt is always present while in ssp. *grisea* this character is present in less than a third of the population. In the Digne subspecies, spot 6 is usually separated from spot 5, while in *aragonia* spot 6 is usually confluent with spot 5. The males of *grisea* are also much lighter in colour and have a heavier dusting of grey scales on the forewings.

A single male of *rhadamanthus* was taken by Col. Manley at Griegos, Teruel, 5,250 ft., 8.vi.1960. This specimen differs greatly from ssp. *aragonia* from Albarracin. The abdominal belt is present but spots 5 and 6 are separate. Spot 6 is also very small and the grey scaling of the forewings is not so intense. The specimen is similar to ssp. *alfacarensis* Reiss. Further specimens from Griegos are required to determine the subspecies. It is possible that it is an example of a high mountain race as the specimen came from a locality nearly two thousand feet higher than Albarracin.

### **Zygaena lavandulae** Esp. ssp. **alfacarica** ssp. nov.

♂ 31-36 mm. Head black, thorax black with white collar, abdomen black with a slight blue gloss. Forewings greenish-blue with spots bright, deep vermilion edged with black. Hindwings bluish-black with a bright, deep, vermilion distal spot; a few vermilion scales at the base.

♀ 35-37 mm. Coloration similar to that in the male but ground colour of forewings bluish-green and forewing spots larger.

Holotype ♂ "Sierra de Alfacar Granada. 3,600 ft., 24.6.1959, W. & M. Manley".

Allotype ♀ with the same data.

Paratypes: 10 ♂♂ and 4 ♀♀ with the same data as the holotype; 1 ♂ with similar data but dated "19.6.1959"; 1 ♀ labelled "Sierra de

Alfacar, Granada, 4,500 ft., 6.7.1960, W. & M. Manley''.

Holotype, allotype and paratypes in collection W. B. L. Manley.

**Zygaena lavandulae** Esp. ssp. **alfacarica** Trmn. ab. **pseudoespunnensis** ab. nov.

A female has a suffusion of vermilion scales on the hindwings similar to that in ssp. *espunnensis* Reiss.

Holotype ♀, "Sierra de Alfacar, Granada, 3,600 ft., 24.6.1959, W. & M. Manley'', in collection W. B. L. Manley.

This new subspecies differs from ssp. *espunnensis* Reiss by the absence of red scaling in the hindwings while the ground colour of the forewings in *alfacarica* is greenish-blue compared with bronzy-green in the former subspecies. Compared with ssp. *barcelonica* Reiss, ssp. *alfacarica* is a larger race with longer and narrower forewings, while the vermilion of the spots is brighter and more intense.

**Zygaena hippocrepidis** Hübn. ssp. **asturiensis** Reiss

*Zygaena transalpina* ssp. *asturiensis* Reiss, 1936, Ent. Rdsch., 54: 91, pl. 2, figs.

A sun-bleached male was taken at La Pena, Huesca, 2,400 ft., 30.v.1960. I place this specimen under ssp. *asturiensis* Reiss as it agrees fairly well with the description and figures given by Reiss. Further material is required to establish whether the La Pena population is identical with ssp. *asturiensis* Reiss which was described from La Liebana, Asturias.

**Zygaena hippocrepidis** Hübn. ssp. **occidentalis** Oberthür

*Zygaena hippocrepidis-occidentalis* Oberthür, 1907, Ann. Soc. ent. Fr., 76: 41.

Four specimens of ssp. *occidentalis* Obthr. were taken at La Roche-beaucourt, Charente, 29.v.1960.

**Zygaena nevadensis** Ramb. ssp. **picos** Agenjo

*Anthrocera scabiosae picos* Agenjo, 1953, Graellsia, 11: 1.

A rather worn male of this subspecies was taken 11.vi.1960 at Riano, Leon, 3,650 ft. Agenjo described ssp. *picos* from Camaleño, Santander (Picos de Europa).

**Zygaena nevadensis** Ramb. ssp. **falleriana** Reiss

*Zygaena scabiosae* ssp. *nevadensis* var. *falleriana* Reiss, 1931, Int. ent. Z., 25: 111, figs.

Reiss described *falleriana* from specimens taken at the end of July and beginning of August in the Sierra Nogra and Sierra Alta near Albarracin, Teruel. A rather worn specimen, which answers to the description and figures of Reiss, was taken on 8.vi.1960 at Noguera, Teruel, at 5,500 ft. As the specimen was taken at such an early date compared with the dates of the specimens described by Reiss, it is probably an example of a spring generation.

**Zygaena filipendulae** L. ssp. **kricheldorffiana** Reiss

*Zygaena filipendulae* ssp. *kricheldorffiana* Reiss, 1936, Ent. Rdsch., 54: 75, pl. 2, figs.

Described from La Liebana, Asturias, this subspecies is distinguished from ssp. *gemina* Bgff. by the more brilliant blue-black ground colour of the forewings and the narrower borders of the hindwings.

A series of fourteen specimens was taken at Riano, Leon, 3,650-3,900 ft., 25.vi.-18.vii.1960, one specimen at Puerto de Pandetrave, Leon, 4,200 ft., 19.vii.1960, and a further specimen from Espinama, Santander, 3,900 ft., on 12.vi.1960.

At Riano, this subspecies of *filipendulae* flies in company with a subspecies of *lonicerae* Scheven, which I describe below as new, and from which it is separated with great difficulty on superficial characters alone. An examination of the genitalia, however, easily separates the two species.

**Zygaena filipendulae** L. ssp. **kricheldorfiana** Reiss ab. **sexmaculata** ab. nov.

In the above mentioned series are three specimens which have spot 6 present on the forewing. Two further specimens which have spot 6 present are from a series of twenty-five specimens in the British Museum (Natural History). These specimens were collected by Romei, 6-18.viii.1924, at Pajares, Asturias, at 1,300 m.

Holotype ♀, "Asturias Pajares m. 1300 18 viii. 24 Romei".

Allotype ♂, "Riano, Leon, 3650 ft.: 27.6.1960, W. & M. Manley".

Paratypes: 1 ♀, "P. de Pandetrave, Leon, 4200 ft.: 19.7.1960, W. & M. Manley"; 1 ♀ with similar data to the allotype but dated "15.7.1960"; 1 ♀ with similar data to the holotype but dated "6.viii.24".

The holotype and one paratype are in the collection of the British Museum (Natural History); the allotype and two paratypes are in collection W. B. L. Manley.

**Zygaena trifolii** Esp. ssp. **caerulescens** Reiss

*Zygaena trifolii* ssp. *caerulescens* Reiss, 1936, Ent. Rdsch., 54: 90, pl. 2, figs.

*Zygaena australis* var. *caerulescens* Oberthür, 1910, Lép. Comp., 4: 493 (ab. *caerulescens* Obthr., name invalid).

A series of five specimens was taken 3-6.vii.1960 in the Sierra de Alfacar at 4,500-5,500 ft.

I must point out here that although Oberthür used the term "var.", the text implies that he considered *caerulescens* an aberration. Further, the lectotype is labelled "Ab. *caerulescens* Obthr.". Details of the lectotype selection are due to be published shortly (Tremewan, 1961). However, the form described by Oberthür as *caerulescens* has since proved to be a good subspecies and according to the rules of nomenclature, Reiss is the correct author of the subspecific name *caerulescens*.

**Zygaena trifolii** Esp. ssp. **aquitania** Le Charles

*Zygaena trifolii* ssp. *aquitania* Le Charles, 1946, Bull. Soc. ent. Fr., 51: 82.

This subspecies was described from specimens captured in the Dropt Valley, Mesterrieux, Gironde. Three specimens of *trifolii*, referable to ssp. *aquitania* Le Charles, were taken at La Rochebeaucourt, Charente, 29.vi.1960.

**Zygaena lonicerae** Scheven ssp. **leonensis** ssp. nov.

♂ 32-39 mm. Head, thorax and abdomen covered with short, bluish-black hair. Ground colour of forewings black with greenish-blue gloss. Forewing spots and hindwings crimson. Hindwings with a blue-black border, widest at apex and narrowing abruptly just before the tornus. Cilia of fore and hindwings blue-black.

♀ 35-39 mm. Coloration similar to that in the male but the gloss of the forewings is bluer and the hindwings are lighter in colour. The forewings are broader than those of the male.

The underside of both sexes is similar to the upperside but the gloss is absent.

Holotype ♂, "Riano, Leon, 3,650 ft. 27.6.1960, W. & M. Manley".

Allotype ♀ with similar data to the holotype but dated "29.6.1960".

Paratypes: 7 specimens with similar data to the holotype but dated as follows:—1 ♂ and 1 ♀ "23.6.1960"; 1 ♂ "27.6.1960"; 1 ♀ "28.6.1960"; 3 ♂♂ "29.6.1960".

Holotype, allotype and 6 paratypes in collection W. B. L. Manley; 1 paratype in collection British Museum (Natural History).

This new subspecies differs from ssp. *intermixta* Verity from Aragon by the longer forewings, smaller spots of the forewings and broader borders of hindwings. The red coloration is, in *leonensis*, a pure crimson compared with crimson tinged with scarlet in *intermixta*, while the gloss in the latter is pure blue compared with greenish-blue in the former.

*Z. lonicerae* ssp. *leonensis* is difficult to separate from *filipendulae* ssp. *kricheldorffiana* flying in the same locality, but when the two species are separated into two series on genital characters, marked differences are noticeable. In superficial characters it may be distinguished from *filipendulae* ssp. *kricheldorffiana* by the thinner antennae, longer and broader forewings and the more pointed apex of the hindwings. In coloration the two subspecies are very similar but the gloss of the *filipendulae* subspecies is pure blue compared with greenish-blue in *lonicerae* ssp. *leonensis*. The forewing spots are smaller in the *filipendulae* subspecies. A further, and almost constant characteristic, is found on the underside of the forewing which has, in *filipendulae*, a suffusion of red scaling between the spots. This red scaling is absent in the *lonicerae* subspecies.

My thanks are due to Col. and Mrs. Manley for allowing me to describe the new subspecies and for presenting to the British Museum (Natural History) some of the specimens mentioned above.

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## Wild Larvae of *Lithophane leautieri* Boisd.

By S. WAKELY

With the increasing records of the capture of this interesting noctuid, it is of interest to report the finding of larvae at last. Although numbers of moths have been bred from ova obtained from captured females, I can find no mention of larvae having been taken in Britain.

During May 1960, Mr. J. Lobb was fortunate enough to get two of these larvae by beating some cypress trees in his garden near Yarmouth, Isle of Wight. He spread some sheets on the ground beneath the trees, and with a 15-foot pole tapped the higher branches. Knowing the larvae fed on the new growths, and surmising that they fed at night at the tips of the upper branches where these growths occurred, he decided to try for them after dark.

Owing to the pyramidal shape of the trees, it was necessary not only to tap the top branches, but also to agitate the lower ones so that the larvae falling from above dropped through the lower branches as well. He was rewarded by finding two larvae barely half an inch long, which he generously sent to me, saying that he would probably be able to get more. They were exhibited by me at meetings of the South London Entomological and Natural History Society, once soon after I received them, and later when they were full fed. Unfortunately, Mr. Lobb failed to get more in spite of several endeavours.

The larvae were kept in a plastic container with a layer of cellulose wadding, and fresh cypress twigs, care being taken to see that they always had plenty of the new growth to feed on. It is interesting to record that they devoured juniper on several occasions when it was offered, but I had to rely on my weekend outings to get foodplant, and it was not always possible to get juniper. The larvae were very obliging, and accepted various kinds of cypress, so long as there was new growth at the ends of the twigs. The fact that they took to juniper so readily is interesting, as Dr. Kettlewell mentioned that on the continent the larvae are frequently found on juniper (*Entomologist*, 90: 3).

By the beginning of July my two larvae were full fed. About this time one of the larvae became very sluggish; I imagined that it was about to pupate. Then a small black scar appeared on the back and it gradually shrivelled up. I discovered later that this scar was caused by two dipterous parasites, the puparia of which were found embedded in the cellulose wadding. Up to the time of writing, these have not emerged, but if they do I will endeavour to get the species determined.

The other larva made a cocoon between two layers of the flat cypress twigs and the moth emerged on 24th September. About this time Mr. Lobb wrote that he had taken his first specimen of the moth in his light trap, and subsequently he took four others by the same means. No doubt he would have taken more had it been practicable for him to stay up until 3 a.m. as this species is noted for the fact that it is more often found flying to the light and settling nearby than actually entering the trap (*Entom. Gaz.*, 11: 16-17).

The recent occurrence of *leautieri* at Leigh, near Reigate (*Ent. Rec.*, 72: 272) supports Dr. de Worms's contention that this species is moving steadily northwards after recently establishing bridgeheads on the south coast (*Entomologist*, 90: 242).

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

*Hapalia fulvalis* Hübn. and *Crambus contaminellus* Hübn. at Parkstone. With reference to Mr. W. Parkinson-Curtis's correction of the spelling of Parkstone, I fancy that my note in the "Record" (76: 186) must be somewhat ambiguous: Diver, Fryer and myself worked out the local occurrence of these two insects in 1932, but their actual discovery in the district was due to Diver alone. The facts are as follows:

In 1931 I was staying at the Beaulieu Road Hotel when Diver came to stay there also. We had corresponded intermittently, chiefly about mollusca, since 1912, when he wrote to me about a queer race of *Cepaea hortensis* Mull. I had discovered on the tidal side of the river bank at Gravesend, and we collected in the New Forest together that June for about a week. Diver was making his well-known ecological survey, and he asked me if I would check up some of his micro identifications.

Accordingly, in the course of the winter, I visited his house in Pembroke Square, and went over most of his collection, including the whole of the micros. Amongst a few difficulties I found that he had about a dozen *fulvalis*, which he had not been able to place, and three or four *contaminellus* which he wished to confirm. The *fulvalis* had been found during the past two years in his mother's garden at Lilliput, Parkstone, and the *contaminellus* on a few gas lamps by the side of the golf course. Lilliput was then almost separate from Parkstone, but I have no doubt it is now swallowed up.

We arranged to work for the two insects in the summer of 1932, and I suggested we might ask Fryer to join us as I knew he was spending his summer holiday at Sandbanks. We could not go until early August, which was rather late for both insects, as both Fryer and myself had to wait until the school holidays had begun. We found *fulvalis* very common in Mrs. Diver's garden, and between us took about a dozen *contaminellus* on the golf course. We did not see *fulvalis* anywhere else but in this large garden at Lilliput; I have no doubt it was to be found in others as it had been present in the district for at least three years, but we had not got the nerve to call elsewhere and ask permission to beat the hedges (the moth has roughly the same habits as *prunalis* Schiff. and *olivalis* Schiff.). We were purposely a bit vague at the time as to the actual site of the capture as Diver did not want his mother and father to be pestered for permission to collect.

Mrs. Maud Diver was the well-known late Victorian and Edwardian novelist, and was engaged on a book when we were there. This did not, however, prevent her from entertaining Mrs. Cyril Diver and my wife whilst the husbands investigated the garden. Perhaps older readers may remember her Edwardian best-seller "Captain Desmond, V.C." It is well over fifty years since I read it, but I can still remember most of the adventures of Theo Desmond, Ladybird, Honour, and Diamond the polo pony.

*Eudoria lineola* Curt.: I caught a number of this moth at Tresco in July 1960, and was surprised to find how small they were; the smallest I have ever seen. The only other insular specimens I have, from the Isle of Man, are very much the largest. The Isles of Scilly, however,



appear to breed small micros; *Polychrosis dubitana* Steph. (*littoralis* Westwd.) is also exceeding small, the very diminutive second brood having been described as subspecies *annetensis* Turner, but there is no distinction other than that of size, and this varies from brood to brood and from year to year.

*Cnephasia colquhounana* Barr.: Mr. E. S. A. Baynes recently sent me a few specimens of this moth to check, which had been taken at Inishtrahull, Donegal. The distribution of the insect is rather puzzling; it is found nowhere in England or Wales, but it is not uncommon locally in the Isle of Man and in one or two places in County Dublin, and after that, patchily from Cork to Donegal, including Tory Island, and then in western Scotland to Unst. Its distribution roughly coincides with that of *Hadena caesia* Borkh. and *H. lepida* Esp., ssp. *capsophila* Dup. except that *caesia* is not found in Dublin, and *capsophila*, I believe, in western Scotland, and both *Hadenae* do not reach the Shetlands. *A. priori* I should have expected all three insects in the Scillies, but they are none of them found there.

## Collecting Lepidoptera in 1960

By R. FAIRCLOUGH

The early part of March was enlivened by the emergence in the airing cupboard of *Colobochyla salicalis* Schiff. and *Acosmetia caliginosa* Hüb., reared from females captured in 1959 in Kent and Hampshire. At the same time, I was disconcerted to find that my *Endromis versicolora* Linn. were emerging, thereby preventing an attempt to try assembling in the moth's old Sussex haunts. As Tilgate Forest bears no resemblance to what it once was perhaps this was not a great loss of opportunity.

A first visit to willows on 13th March, a mild night, found only six moths at the catkins despite good results at the m.v. light at home at this date, when many of the spring moths were out.

The first real quarries were *Jodia croceago* Fabr. and *Gypsites leucographa* Hüb. I met a friend on the 22nd at Dunsfold, where we found more collectors than moths. It was not long before six of us were gathered round the one light being used, filling in the time in pleasant gossip. Before dark, I had found some spruce cones, and from these one *Laspeyresia strobilella* L. emerged in May.

On 2nd April, at Ockham and Wisley, we saw *Polygonia c-album* L., and plenty of *Gonepteryx rhamni* L. while we were collecting larvae of *Laspeyresia coniferana* Ratz. That night I returned to Dunsfold, and was pleased to take three fresh *leucographa* out of about fifty moths seen on the willows, most of which were over. I decided to press home the attack, returning on the 4th, which seemed a better night. This time the m.v. light was taken, but neither that nor the catkins produced anything worth-while.

On the 6th a prolonged downpour till 7 p.m. ruined the night, less than twenty moths being seen. A fourth trip to the same place in a week, on the 8th, was more successful, females of *leucographa* being taken. Another interesting moth on the catkins was *Lithophane socia* Rott.

This had been the best week of the spring for moths but *croceago* had once again not been seen. However, ova from the *leucographa* successfully produced pupae in due course. On the only other occasion I had larvae, they did not pupate properly, probably owing to being given too dry a material. This time they had damp compost.

On 5th April a *Pararge aegeria* L. was seen in Reigate, an early date in a not exceptional season, and on that date some *Enargia paleacea* Esp. ova hatched. The larvae were no trouble, the moths emerging in June, earlier than in the wild. This was the successful conclusion of a trip to the Wyre Forest in mid August 1959. The night had been a poor one, light being barely patronised, and sugar having only twelve visitors. One of the dozen was the *paleacea*, though this occasion being an exception to the general rule that low numbers mean nothing one wants.

In the Thames Valley on the 21st plenty of *Celastrina argiolus* L. were flying, some of them worn. We were collecting *Panaxia dominula* L. larvae.

In 1958 Ron Parfitt and I had made the long journey to Taunton for *Xylomyges conspicillaris* L. Weather conditions were bad; nothing was found at rest, while only six moths came to the m.v. As one of these was a *conspicillaris*, we concluded that it must be a common species there. We could not return in 1959, but 7th May 1960 saw us once again on our way there. The weather this time was a complete contrast, being hot, sunny and calm. A nightingale sang for us as we lunched on a slope overlooking Sedgemoor, while *Metriotes modestella* Dup. was common on the stitchwort flowers. Arriving in the area we fancied near Taunton, I pulled the car off the road. My companion got out, walked to the nearest fence post, and said, "Here's one". It was a female of the *melaleuca* form. We found six in all nearby, most of them females. Search over a wider area produced only two others, so that we had made a lucky stop. These were all of the form figured in "South".

Naturally, with 1958 in mind, we expected a run of males at the m.v. lamp, but nothing of the sort happened, a stretch of three hours giving many midges, some cockchafers and only sixteen species. One of these though, was *Eupithecia dodoneata* Guen., a pug I have tried to find for years. As we had no difficulty in rearing our *conspicillaris* larvae on dock, chickweed, knotgrass, or almost anything offered them, the expedition was a complete success, though we still cannot understand why none turned up at the light.

The second m.v. outing was in the Tillingbourne Valley at Abinger, on 14th May. The night was chiefly remarkable for 112 cockchafers, moths being a bad second. Still, there were thirty-three species, not bad for a May night, and I was pleased to see *Celama confusalis* H.S., and *Chesias rufata* Fabr.

The same number was recorded on the 25th in St. Leonard's Forest. Having bred *Lampropteryx otregiata* Metc. last year, I took a late *L. suffumata* Schiff. for eggs.

On the 29th I looked in at the Sussex home of *Scopula immorata* L. and was horrified to discover all the surrounding woodland cut. I have seen this moth in such small numbers in recent years that I am sure this is the end of it.

Four hours spent in hot sunshine on 4th June in the Ham Street woods were disappointing. We had hoped to see *Sesia apiformis* Clerck,

some interesting microlepidoptera, and Bee Hawks. (What has happened to these? I have seen none in the last few years.) A few *salicalis* were put up but the only common moth was *Oecophora geofrayella* L. The sand dunes and salt marshes at Camber were equally unproductive, though the flowers were interesting, especially the fine show of Sea Pea. This is the foodplant of *Phycita boisduvaliella* Guen. but the moth occurs only on the eastern coast. We tried to find larvae in the peas a couple of years ago here, without success.

Some *Orgyia revens* Hübn. females were taken to Pember Forest on 10th June to assemble the species. The weather was sunny and windy, apparently right for the attempt but we failed. We found *Minoa murinata* Scop. in large numbers everywhere, and a second brood was bred in August from some of the females, the larvae being fed on the weed, Petty Spurge.

On the 11th, we returned to Ham Street for a night, but had no success. A good round of sugar yielded only seven moths, and the m.v. only forty-four species, a rather dull lot, only *salicalis* and *Euphyia luctuata* Schiff. being kinds one could not have seen in any woodland.

Every year in June I make as many trips to Balcombe as possible, hoping to see *Cerura bicuspis* Borkh. As it is less than half an hour's run, it is possible to try even in mid week. In 1953 I first took the moth (one on 22nd May, two on 10th June), and thought that it would be easy to take a series in a few years. However, it was 1959 before I saw the moth again and then only a single one. This year, on the 15th, I tried a locality in St. Leonard's Forest, but the sky cleared. Fifty-five species were seen, *Stauropus fagi* L., *Hapalotis venustula* Hübn., *Semiothisa notata* L., *Electrophaes corylata* Thunb., *Bapta bimaculata* Fabr., *Ectropis luridata* Borkh., *Hyloicus pinastri* L., *Sterrhia inornata* Haw., *Tethea fluctuosa* Hübn., *Comibaena pustulata* Hufn., *Apatele leporina* L., being typical of the area, but there was no sign of *bicuspis*.

The 16th was so obviously a good mothing night that to Balcombe we went. On the hill there was a mist, but a mist of the right sort. Six *bicuspis* arrived between 10.45 and 11.20 (their usual time of flight). Mr. R. Mere has since told me that he took six about a quarter of a mile away on the same night.

The following night Ron Parfitt came, so we had two lights going. However, the meteorological conditions were different, with a clear sky though the temperature remained at 55° F. About eighty species were seen, among them seven *Apatele alni* L., which had not appeared the previous night, probably because I left early. But there was no *bicuspis*. On the Saturday night, the 18th, we returned. Though the sky was clear the temperature was still 64° at 1.30 a.m., a remarkable figure. I recorded eighty-six species at my own m.v., the best result of the year. Three *bicuspis* came rather later than usual (up to 12.5). A female *fagi* had come in at 10.15, and she was kept for eggs, her offspring yielding some pleasure in the larval stage later. I was most pleased to see *Atolmis rubricollis* L., two of which came about midnight, but it was also pleasant to see such variety as *Deilephila porcellus* L., *A. alni*, *Craniphora ligustri* Fabr., *Tethea ocularis* L., *T. fluctuosa* Hübn., *Boarmia robararia* Schiff., *H. venustula*, *Drymonia trimacula* Esp., *Mysticoptera sexalisata* Hübn., among the ever presents such as *Spilosoma lutea* Hufn., *Notodonta ziczac* L., *Bapta temerata* Hübn.

Another good night was experienced on the Downs at Abinger on the 25th, when seventy-eight species were "attracted". Among these there were those with a chalk "flavour" such as *Setina irrorella* L., *Eupithecia haworthiata* Doubl., *E. subumbrata* Schiff., *Melanthia procellata* Fabr., *Agrotis clavis* Hübn., *Scopula ornata* Scop., *Sphinx ligustri* L., *Apamea sublustri* Esp., *Euphyia cuculata* Hufn., but the bulk of them were the same as one sees anywhere. The most interesting moth was an *Ephestia* which I am hoping is *woodiella* R. and Thom: but which needs checking at the British Museum.

A dark overcast sky on the 27th was too good to miss, so the light was set up at Balcombe at 10 p.m. just as the light rain began to fall. To prove that these were the conditions moths like, I had 52 species by eleven, easily a record. At 11.30, with the score at 67, the rain, which had become steadily heavier, made continuing an impossibility. I was pleased to see *Calocalpe undulata* L., *Bomolocha fontis* Thunb., and *Chlorochystis debilitata* Hübn. This last is common in the Leith Hill area (as is *fontis*) but this is the first time I have recorded it in Sussex.

June had been a good month, but July turned out the opposite. We went to Folkestone Warren on the 2nd, but though there was a little sunshine, the cool east wind was unpleasant. A few fresh *Aplasta onoraria* Fuess., were seen but no Clearwings, so we turned to the smaller fry, taking *Laspeyresia microgramma* Guen. among the Ononis, *Alaina microdactyla* Hübn. on Eupatorium, and digging out pupae of *L. leprastriana* Curt. from the wild cabbage. These produced a few moths, but parasites were too common, while some pupae dried up.

Balcombe on the 9th gave a bad night with nothing interesting, except an *Anania stachydalis* Zinck. which was lost as it hopped about the sheet. I first found this species last year at another place in the area, and found it then difficult to box, one out of four being lost.

During a daytime visit to Plaistow in Sussex, on the 16th, we saw plenty of worn *Limenitis camilla* L. and some fresh *Argynnis paphia* L. Knocking spruces gave some *Eucosma ratzburgiana* Sax., and a *Schrankia taenialis* Hübn. This species I first saw last year at Emsworth in Hampshire, where one was taken on sugar.

A separate note has been written of my discovery of *Coenotrephia sagittata* Fabr. in Nottinghamshire. At the week-end, 23rd-24th, I made two trips to Strensall with George Hyde. We spent hours walking about before dark, and afterwards, with handlamps looking for *Epione parallelaria* Schiff. (*vespertina* Thunb.) on both nights. One only was found, sitting near the m.v. sheet on the 23rd. The only interesting moth at light was *paleacea*, it being of a darker form than those bred from Shropshire.

En route for home on 27th July, I ran the m.v. on the roadside at Holme Fen. The rain soon set in, but some *Arenostola fluxa* Hübn. past their best, and fresh *A. phragmitidis* Hübn. were taken before conditions became too wet. *Tethea duplaris* L. was common, in variety. A female *Pelurga comitata* L. was kept for ova.

On the 29th sugar and m.v. were used in the Ouse Valley, south of Lewes. Apart from a fresh *Celaena leucostigma* Hübn. the moths at sugar were mainly *Apamea monoglypha* Hufn. and *A. secalis* L. The night promised well for light with odd spots of rain from an overcast

sky, but an electrical fault developed at eleven. By then a lot of moths had come, including *Eremobia ochroleuca* Esp., *Nonagria dissoluta* Treits., *Cosmia affinis* L., *Apamea scolapacina* Esp., and the *wismariensis* form of *Chilodes maritima* Tausch.

As we had to make a trip to Windsor on the 31st, we decided to continue to the Chilterns to try the light there. We were able to set up in a good position surrounded by beech, ash and maple, but the night was cold and clear, so that after eleven hardly a moth came. Certainly nothing desirable flew. I had hoped to see *Lophopteryx cucullina* Schiff. *Heterogenea asella* Schiff. and such species as are found in these woodlands. One or two pugs caused some interest. I was hoping for *Eupithecia fraxinata* Crewe but they were *E. laricata* Frey. and must have been a second brood as this moth flies in May.

A disappointing daytime hunt in the Swanage area followed on 3rd August when the butterflies flew little in cloudy conditions. On Studland Heath the sight of a Dartford warbler compensated for the lack of insects. With the sky more threatening, we retreated to near Brockenhurst. A ride was sugared, leaving the m.v. on the roadside. I am always hopeful that sugar will be successful (in this case *Catocala sponsa* L. and *C. promissa* Esp. were possibles) but find little to warrant the optimism in the event. On this occasion ten moths of three common species attended. To think that I used to dream of the New Forest when, in the North, I first read of its delights! I was surprised when a *sponsa* flopped on the sheet at 10 p.m. This, a fresh female, was kept for eggs without success. This species and *promissa* seem to be difficult to persuade to lay. If anyone has any secret of success they are willing to divulge, I for one would be glad to know of it.

The only other moths of interest seen are some *Amathes stigmatica* Hübn. and a worn *undulata* which did lay.

On the 5th, we made a three hundred and fifty mile round trip to Barton Broad, stopping on the Breck to find *Silene otites* still flourishing where Geoff Cole and I took *Anepia irregularis* Hufn. in 1954. By the afternoon we were having our first view of the Broads, where I concentrated on exploring the perimeter of Barton, being interested in the foodplant of *Papilio machaon* L. without seeing the butterfly in any stage, but finding a reed bunting's nest with eggs.

At night, although there was a full moon, the m.v. was quite effective. *Celaena haworthii* Curt. swarmed and a dozen *C. leucostigma* came while the most exciting visitor was the rather dingy *Pelosia muscerda* Hufn. Little could be found by walking about with a lamp, and *Arenostola brevilinea* Fenn. was not seen, though before dark *Coenobia rufa* Haw. was everywhere, with *haworthii* and *Scopula immutata* L. Of the forty-eight species seen the only other marsh-lovers were *A. phragmitides*, *A. pygmina* Haw., *Orthonama vittata* Borkh., *Comacla senex* Hübn., *Philudoria potatoria* L., the rest being common garden kinds.

On the 17th the m.v. was used again at Lewes with hopes of *Euxoa obelisca* Hübn., seen there in the past. This moth did not turn up, and with six bats setting up a patrol over the light by eleven, moths ceased to arrive. In the first half hour seven Wainscots were recorded, *Leucania straminea* Treits. (v. late), *L. impura* Hübn., *L. pallens* L., *phragmitidis*, *dissoluta*, *Nonagria sparganii* Esp., and one *N. geminipuncta*

Haw., a moth that shuns m.v., as indeed many of this group do. One can see plenty over the reeds, but they seldom come to the sheet.

We decided to go to Lancaster for the last week of August, a later date than that for our usual visits, with hopes of *Oporinia filigrammaria* H.S. and *Amathes agathina* Dup. A search of the stone walls on the lower slopes of Clougha on the first evening yielded only odd *Antitypechi* L., *Calostygia didymata* L. and *Hydriomena furcata* Thunb.

Despite some rain, we took the m.v. over the Yorkshire border to Ribbleshead on the Ingleton-Hawes road, passing between Ingleborough and Wharfedale, their heads invisible in thick cloud. Here, where the limestone yields to millstone grit at 1100 feet, the heather appears. With a strong wind, the sheet produced only odd specimens of *Trichiura crataegi* L., *agathina*, *Hydraecia oculate* L., *haworthii*, *Plusia festucae* L., *Calostygia salicata* Hüb., with the usual *monoglypha*, *secalis*, *pronuba* tribe. However, a good colony of *filigrammaria* was found sitting on a patch of heather, with some *furcata*, and *Lygris testata* L., giving the unusual experience of collecting all one wanted of a "new" species at one attempt.

I always try Black Tom's Lane at Witherslack, but the weather was bad, and the night of the 27th when we got there was useless, the heavy rain having just ceased. Nothing stirred at dusk, and few moths came to the light. As a contrast to this, I experienced a good night in another locality I have often tried without success, the top of the Trough of Bowland, where there are some fine heather-bilberry moors. There, on the following evening, the sheet was well covered with *Lycophotia varia* Vill., *C. haworthii*, *Cerapteryx graminis* L., *Amathes glareosa* Esp., *A. castanea* Esp., *Hydraecia lucens* Frey (to be checked), *Lithomoia solidaginis* Hüb., *pygmina*, *filigrammaria*, *Lygris populata* L., *H. salicata*, *Eupithecia nanata* Hüb., *didymata* and others, plenty of *Anchoscelis helvola* L. being a surprise so early, and a Red Admiral to complete the bill.

Between showers on our final day, my son and I tried to find larvae of *Perinephela terrealis* Treit. on the golden rod at Arnside. We failed but found other larvae, one *Phalonia curvistrigana* Wilk. having since been bred, and some pupae being now in store, which I hope are *Eupithecia virgaureata* Doubl. An attempt to use the light at night was ruined by a deluge.

Perhaps it would be as well to cast a veil over the rest of the year. Certainly the usual pleasant autumnal trips in the expectation of exciting migrants were largely washed out. For me the season means confinement to Saturday expeditions, but though they were made, they were a series of failures.

First, there was the Cuckmere Valley on 3rd September with neither sugar nor m.v. producing more than a few common species. At Dungeness on the tenth where the sun shone all day, we saw the only *Vanessa cardui* L. of the year, and noticed a few *Calophasia lunula* Hufn. larvae. But the new road to the atomic power station had altered our favourite area. It is no longer possible to pull off the road as it was at many spots on either side of the old single width one, for after widening, a shoulder of loose shingle has been built up, making a surface on which it is impossible to take a car.

We moved out to Romney Marsh, where a thick white mist hung over the flat acres. Two *Hydraecia hucherardi* Mab. with a few other

commoners came to my glimmering light. One of these was *Catocala nupta* L., a moth not often seen at the m.v. though at home this year they have come in numbers.

The only occasion when any number of moths was seen throughout the autumn was on the twelfth at Balcombe when for ninety minutes a steady stream arrived. *Asphalia diluta* Schiff. was the commonest species but the best moth was a fresh *Leucania albipuncta* Fabr.

With this species in mind a visit to the Birling Gap-Friston area of the Sussex coast was made on the 17th. There was an unpleasant east wind, but even so one would not have expected so poor a result, for sugar, m.v. light, and ivy together yielded only eight species. In these circumstances they were almost certain to be such abundant species as *Phlogophora meticulosa* L. and so they were.

With conditions obviously bad on the two following Saturdays short runs to Balcombe were made to the pine area. On the 24th, one fresh *Thera firmata* Hübn. was taken, but only fifteen moths—nothing of interest—came to the light on 1st October.

This date was one when we hoped to go to Swanage to try for *Dasypolia templi* Thunb. Three weeks later, we were still waiting, and finally on the 23rd we risked the threatening skies. An easy run on the empty roads brought us to Durlston Head by noon, where we chose a site for the night's work. In the afternoon some showers fell, but the m.v. was put on at 5.45 p.m. in a fair period, though the sky was blacker than ever.

The wind now rose, and after an hour we were having a thunderstorm. The generator, usually unperturbed by any weather conditions, chose that moment to pack up, so that we had to retire, not a moth having been seen at the light.

This was the night on which Bridport farther west had a disastrous flood, and we had water to negotiate near Wareham on our way back. There was still some ivy in lovely condition even at this date, but only *meticulosa*, *Agrotis ipsilon* Rott., *Agrochola circellaris* Hufn., were seen on the flowers.

Two attempts to catch *Ptilophora plumigera* Esp. on the Surrey Downs in November were failures, one of them with Ron Parfitt on the twelfth going down in my records as a minimum of moths, one *Erannis defoliaria* Clerck and one *Plutella maculipennis* Curt. coming to two m.v. lights.

None of the October week-ends gave any opportunity of spending a few pleasant hours searching for *Lithocolletis* mines, and when we gave brief attention to any trees between showers, we formed the opinion that these tiny moths were scarce, too.

One season leads to another. Perhaps the nights next Easter will be warm enough to tempt that female *croceago* to the willows at last.

Blencathra, Deanoak Lane, Leigh, Reigate, Surrey. 6.xii.60.

## Forestry in Britain and its Effect on Insects

By T. R. PEACE

The main object of the Forestry Commission, and of the many private owners who are running their woodlands as a business, is the production of timber on sound economic lines. This does not, however,

mean that the preservation of beauty and of rarity is forgotten. The Forestry Commission is in close liaison with the Nature Conservancy over the preservation of areas of scientific interest, and with the National Trust and other bodies over the preservation of natural beauty. For instance, great care has been taken to preserve some blackthorn thickets known to be the breeding haunts of the Black Hairstreak, despite the felling of Hell Coppice by the firm who had, after all, bought the timber.

Most of the good land is rightly used for agriculture, and thus forestry is largely relegated to land which is too poor for the growth of broadleaved trees as timber. Wherever hardwoods can reasonably be expected to produce an economic crop, they are being planted. Thus, even in fifty years time, there will still be a very large area of normal broadleaved forest, apart from nature reserves and other unmanaged areas. Details of the species used and the areas planted can be found in the Annual Reports of the Forestry Commissioners, published by the Stationery Office.

It is very important to realise that the main increase in the area under coniferous trees in Britain is at the expense of hitherto bare ground, rather than of broadleaved woodland. Secondly it is important to know that conifers are better suited than hardwoods to most of the purposes to which timber is put, such as house joinery, box making, pitprops, plywood and paper pulp. However, new uses of hardwood timber are constantly being explored.

But surely there is no need to take the view that the planting of conifers means the end of entomological interest. In fact it has encouraged a host of interesting and rare insects, for instance the scarce and beautiful Pine hawk and Nun moths on pine. For those interested in Microlepidoptera there is a most rewarding field in conifers—to mention a few, *Laspeyresia coniferna* and *L. conicolana* on pine, *Eucosma griseana* and *Laspeyresia zebeana* on larch, *Eucosma tedella* and *E. ratzburgiana* on spruce.

The planting of conifers has also resulted in the spread of many sawflies (Hymenoptera) known only as rarities before, and, in two cases, found for the first time and named in Britain. In the first category there are *Gilpinia frutetorum*, *G. pallida*, *G. virens* and *Acantholyda pinivora* on pine, *Cephalcia alpina* on larch, and *G. hercyniae* on spruce. In the second category there are the two species *Anoplonyx destructor*, now very common in all larch forests, and *Pristophora glauca*, still a rarity. In addition to these species those interested in variations should bring to mind the great work done by the late Dr. Cockayne in this field upon *Bupalus piniarius*, the Pine looper moth.

There are also the intriguing changes of host plant which sometimes take place in these newly established woodlands—to mention a few: the beautiful Broom moth larva which feeds so happily on pine, larch and spruce, the Knotgrass moth now feeding on larch and spruce, and the Pepper and salt moth, made famous by Dr. Kettlewell in his work on industrial melanism, also completing its life-cycle on larch and spruce.

The Forestry Commission has encouraged the planting of poplars, trees which have a remarkably rich insect population. Apart from the Poplar hawk and Puss moths, there are attractive sawflies, such as



*Croesus septentrionalis* and the exciting metallic colourings of the *Phyllodecta* poplar leaf beetles and of *Crysmela populi*.

We all resent changes in the countryside to which we have become accustomed, but forestry, like farming, is not a static matter, and we do not complain when the farmer reaps his corn. I hope I have shown above that forest changes, which are an inevitable part of real forestry, are not really destructive of entomological interest, and that the much maligned conifers have an insect value of their own.

## Lepidoptera at Highcliffe, Hants.

By F. M. B. CARR

This is not an account of my own collecting, but an attempt to put on record some of the interesting captures made by the late Mr. B. C. Barton of Castle Mead, Highcliffe. These captures were mostly made at m.v. light in his garden.

It was through the pages of the *Entomologist's Record* that he and I became acquainted. After reading some of my collecting notes in the *Record*, Mr. Barton wrote to me at Mudeford, about two miles distant, and suggested a meeting. This was, I think, in 1952. We soon found that we had many interests in common beside our enthusiasm for collecting moths and butterflies. Our first expedition was early in 1953 and after that we often went out together. I shall always look back on those excursions with a most congenial companion, with the greatest pleasure. Alas, they ended all too soon. My friend never really recovered from his serious illness in 1957, and my last outing with him was on 17th June of that year. A few months ago he died.

After Mr. Barton's death, his son and daughter very kindly offered me his collection. This was of a special interest to me owing to the nearness of Highcliffe to Mudeford. I regularly worked light and treacle at Mudeford from 1952 to 1957 as recorded in the *Entomologist's Record*. Mr. Barton seldom sent in records of his captures, but where he did so, I have made a note of his previous record.

In compiling these notes, I am confronted with certain difficulties. In the first place, we were unable to trace any diaries. Secondly, Mr. Barton confined his series to four or five specimens, and the labels do not give any information as to the abundance or otherwise of the species concerned. In many cases I learned something about this from my occasional visits to the m.v. light, and also from conversations with him on the subject.

And now a word about the locality. Highcliffe is on the main road from Christchurch to New Milton. The garden of Castle Mead is extensive, and the part furthest from the house abuts on to this main road. On the other side of the main road stands Highcliffe Castle. Until quite recently the extensive grounds of the castle were well wooded, but unhappily it was sold, and during the past two or three years the trees have been disappearing and small houses taking their place. On the other side of the castle is the sea. Next door to the castle on the Christchurch side is the golf course. There is another small area of rough woodland on the landward side of Castle Mead. Up to the

present, this appears to be untouched. It contains a patch of fine old birches, such as are beloved of *Odontosia carmelita* L. This species, as will be seen, figures in the list.

The house has now been sold. There are some old oaks round the garden and also a beech hedge.

So far as one can see, such localities as Highcliffe and Mudeford must before very long be numbered with the have-beens, like certain parts of London, once beloved by Stainton and others. They are already localities in which there are no facilities for day collecting, but where light and treacle in a garden can still provide a few thrills.

With one such I begin this record. On 17th October 1954 there was a lovely *Acherontia atropos* L. in the trap.

A word about this trap. My friend, who was very clever with his hands, made it himself. For some time it proved all that could be desired. Then came a nasty setback. There was a spell when examination of a morning showed that the cupboard was bare. Whodunit? Sherlock Holmes had his suspicions.

I once had a dear old gardener in Lancashire who had no suspicions at all, he *knew*. One morning he said to me: "Why, Mr. Carr, it's scandalous what them sparrers have done to my peas, so I've took the liberty to put an old man in the garden". I turned pale. Another old man to pay? I thought. I could barely afford to pay one. However, the second old man did not ask for any pay, nor, so far as I could see, did he do any good, in fact I think the "sparrers" rather liked him. Pardon the digression, but it was "sparrers" wot wolfed the moths. So my friend had to reconstruct the entrance to the trap. "Not too narrow; leave room for the next death's head", I said. However, no second death's head came.

There are three *Celerio livornica* L. in the collection, one dated 14th July 1948, one 25th May 1953, and the third without date.

*Deilephila elpenor* L., I understand, was common as it seems to be throughout the Christchurch area, but *D. porcellus* L. I had not previously seen locally. There are five in the collection.

I gathered from Mr. Barton that all the more generally encountered "prominents" were frequent visitors, so were *Stauropus fagi* L., *Drymonia trimacula* Esp., *D. ruficornis* Hufn. and *Notodonta anceps* Goeze.

There are two *Odontosia carmelita* L., both taken in the first week of May 1956, as recorded by Mr. Barton (*Ent. Rec.*, 68: 189).

*Clostera curtula* L. was fairly common. *Tethea ocularis* L., as at Mudeford, was not uncommon. In 1953 two small, lightly marked *T. or* Fabr. were taken. Several *T. duplaris* L. are in the collection; I used to beat the larva of this species freely in Delamere Forest, but since I came back south, I have found the species most elusive. I particularly wanted to come across the pretty southern form again. Strange to say, one of Mr. Barton's moths from Highcliffe is of the dull northern form.

Both *Achlya flavicornis* L. and *Polyphlocia ridens* Fabr. were frequent. *Dasychira fascelina* L. is represented by three males and one female dated 1952-54. This seems to me a remarkable record, though I once took a moth of this species in Bournemouth Square.

*Lymantria monacha* L. At the beginning of the present century, this moth was very common in the New Forest; I rarely see either the moth or the larva there now, but it still flourishes at Highcliffe, and

came very commonly to Mr. Barton's light. One *Trichiura crataegi* L. was taken on 30th May 1954. *Poecilocampa populi* L. was common, so was *Gastropacha quercifolia* L., and the same may be said of *Drepana binaria* Hufn. and *D. cultraria* Fabr.

*Pseudoips bicolorana* Fuessl. was fairly frequent.

*Cybosia mesomella* L. was scarce, being represented by two moths only. The best of the footmen taken at Highcliffe is *Lithosia quadra* L. Of this moth, Mr. Barton took three males and one female. The males were taken on 6th August 1953, 8th October 1954 and 22nd August 1955; the date of the female is 24th August 1954. All are in good condition except the 1955 male. Of *Eilema deplana* Esp. I am unable to say whether it was at all common. Mr. Barton's customary short series is complete. *E. sororcula* Hufn. was, I know, quite common.

*Apatele leporina* L. and *A. aceris* L. were common. The best of this group that came to light was *A. alni* L. I found that Mr. Barton, after completing his short series, was light-heartedly liberating any others that came along. When he found that I was interested, he kept a few for me. I do not know how many he encountered altogether but there were ten left, three taken in 1953, two in 1954, and five in 1956.

As at Mudeford, *Amathes glareosa* Esp. was represented by a single moth (1954). There are five *A. agathina* Dup., a moth I never saw at Mudeford. I wonder whether the larva of this species has taken to any of the heaths that are grown so largely in gardens? Highcliffe seems an unlikely spot for the species otherwise. Mr. Barton had many garden heaths. He left also a full series of *A. castanea* Esp.; I have only seen a single moth of this species at Mudeford.

*Triphaena interjecta*. What a species this is for reducing itself to rags and tatters! How I should like to breed a series. There was one good one from Highcliffe, where I imagine the species was as rarely seen as at Mudeford. An interesting capture was *Heliphobus saponariae* Esp.; of this species there are three specimens, two in 1953, and one the following year. *Tholera popularis* Fabr., a common enough species, I mention since I have never seen it at Mudeford; it abounded at Highcliffe. *T. cespitis* Fabr. is represented by three specimens that appeared in 1953.

Of *Apamea anceps* Hübn. there are two; this is a species I have not come across in recent years; is it still supposed to be common? There are only two *A. hepatica* Hb. In October 1955 we had a big surprise in the shape of three *Dasypolia templi* Thunb. I was still more surprised to take one in Bournemouth Square on 7th October of 1960.

One *Celaena leucostigma* Hübn. appeared in 1953. The "wainscots" were rather a weak spot at Highcliffe compared with Mudeford and its adjacent reed beds in Christchurch harbour. Several of the Mudeford species are not represented. Of *Coenobia rufa* Haw. and *Arenostola pygmina* Haw. there are single specimens. Nevertheless, there are a few nice things in this group, notably 2 *Leucania vitellina* Hübn. One of these dated 14th September 1953 was reported by Mr. Barton (*Ent. Rec.*, 65: 329). The other has not been previously reported. One *L. albipuncta* Fabr. was taken on 3rd October 1954. (Two moths labelled *L. favicolor* Barr. were, I believe, vetted by the late Dr. H. King, but as I have not personally met with this species, I should hesitate to say that these two moths belong to it. They certainly look

different from the longish series of *L. pallens* L. in my collection.) Of *L. l-album* L. there are two as against eight taken by me at Mudeford.

The *Orthosias* are well represented, and amongst them is one *Orthosia advena* Schiff. in good condition. This seems an interesting record and was reported by Mr. Barton himself (*Ent. Rec.*, 65: 329).

*Cosmia pyralina* View. seems to have been rather uncommon at Mudeford. There are two *Zenobia subtusa* Fabr. and one *Parastichtis suspecta* Hüb. *Atethemia xerampelina* Hüb. was quite plentiful, but very scarce at Mudeford, where ash trees are much less in evidence.

I do not know whether Mr. Barton found *Anchoscelis helvola* L. at all common. There are five Highcliffe specimens in his collection, but as two of these were not taken till 1957 it would appear that the species was not common. I never saw anything of it at Mudeford.

I should have expected that Highcliffe would prove a good place for *Tiliacea citrargo* L. as there are many very likely old lime trees there, but there are only two of this species in the collection. I took three at Mudeford at treacle. *T. aurago* Fabr. is represented by five specimens, and I understood from Mr. Barton that he had liberated several more. As at Mudeford, *Citria lutea* Stroem. was common, and so was *Cirrhia icteritia* Hufn. Two of Mr. Barton's series of the latter were ab. *flavescens* Esp. *C. icteritia* has long been a great favourite with me, and I have a long series. I always remember my first acquaintance with this very pretty moth while sugaring in Joydens Wood, Bexley, with my beloved father in the far off autumn of 1898. During the period of Mr. Barton's activities at Highcliffe I took *C. icteritia* commonly at sugar at Mudeford, and kept both eyes open for ab. *flavescens*. On the whole, however, the Mudeford examples were particularly well marked, and some more heavily than any others I have taken. I have never seen ab. *flavescens* in the wild though I once bred it from a very small batch of larvae.

Mr. Barton reported his one capture of *Dasycampa rubiginea* Fabr. (*Ent. Rec.*, 68: 189). Naturally, after its long life, it is a poor thing; the date of capture is 29th April 1956. Of *Lithophane semibrunnea* Haw. there is only one, and of *L. socia* Rott. there are two. Both species occurred in good numbers at Mudeford, particularly the former. I noticed that these two species patronized sugar gladly but were not easily beguiled by light. Mr. Barton did not find sugar profitable in his garden, so did not persevere with it. After all, it is a messy and uncertain business, but it still has a great fascination for me and even the m.v. light does not seem to equal it for certain species.

But my friend has me beat with a fine *Xylena vetusta* Hüb. a species not seen by me at Mudeford, though I had two at sugar at Sandbanks, and used to take it in the north.

There are two Highcliffe *Cucullia verbasci* L. in the collection, and as at Mudeford, *C. chamomillae* Schiff. seems to have been fairly common, as it is throughout the Christchurch area.

*Anarta myrtili* L. rather surprised me, but there are three, presumably taken in the day time. *Heliothis peltigera* Schiff. was taken on 24th May 1953. *Polychrisia moneta* Fabr. and *Plusia festucae* L. are both represented by full though short series. There are three *Lygephila pastinum* Treits., and *Laspeyria flexula* Schiff. was not uncommon.

Turning to the Geometers, *Hipparchia papilionaria* L. and *Comibaena pustulata* Hufn. are the best of the "emeralds". I never encountered *C. pustulata* at Mudeford but the short Highcliffe series of it is complete and Mr. Barton liberated others; how many, I do not know.

*Cosymbia porata* Fabr. is another moth that did not appear at Mudeford. There are three in the Highcliffe collection. There are several *Acasis viretata* Hübn. This, a frequent visitor to my Mudeford light, appears to have been at least as frequent at Highcliffe. There are a few *Nothopteryx carpinata* Borkh. and a single *Lobophora halterata* Hufn.

There is one *Calocalpe undulata* L., and one very lovely *Chloroclysta siterata* Hufn. *Lampropteryx suffumata* Schiff. is also only singly represented. I think that this insect cannot be common in the Christchurch area, as I only had one at my Mudeford light. Another species only singly represented both at Highcliffe and Mudeford is *Euphyia picata* Hufn. On the other hand *Mesoleuca albicillata* L. is fairly common, and *Plemyria bicolorata* Fabr. not very often seen.

Mr. Barton, no doubt, met with *Nycterosea obstipata* Fabr. not uncommonly, as did I at Mudeford. *Semiothisa alternaria* Hübn. was common to both of us, and *Itame wauaria* L. scarce. *Plagodis dolabraria* L. was another common moth. *Deuteronomos fuscantaria* Haw. was quite common at Highcliffe though I only saw it once at Mudeford. Of the other "thorns", *D. alniaria* L. was the commonest at both places. Highcliffe boasted *Ennomos quercinaria* Hufn. and *Deuteronomos erosaria* Borkh., both, I believe, fairly frequently, and *Selenia tetralunaria* Hufn. was really common.

*Phigalia pendaria* Fabr. was abundant. On 15th March 1955 Mr. Barton took a melanic male. In March 1953 two *Apocheima hispidaria* Fabr. came to his light and we had great hopes that more would follow, but in this we were disappointed. One of the two was of the very pretty form with the white hind margin to the forewings. We have seen nothing more of this species in the neighbourhood.

The following were all more or less common—*Lycia hirtaria* Clerck, *Biston strataria* Hufn., *B. betularia* L., *Boarmia punctinalis* Scop., *Hemerophila abruptaria* Thunb. and *Cleora lichenaria* Hufn. There is one *Cleora jubata* Thunb. which is the only one I have seen from the Christchurch area. There are two *Ectropis extensaria* Hübn., another very scarce moth here, and one *E. consonaria* Hübn.

In conclusion, there is one *Apoda avellana* Hübn., and *Zeuzera pyrina* L. was sometimes a pest, much commoner apparently than *Cossus cossus* L.

Flat F.8, Pine Grange, Bath Road, Bournemouth.

UNUSUAL LARVAL FOODPLANTS.—Unusual foodplants for two species of Lepidoptera were mentioned by Mr. H. Symes in a recent letter, and, with his consent, I give them herewith.

*Orgyia antiqua* L.—"Many years ago I found a number of larvae of this species feeding on *Wistaria* on an old house in Somerset. This is not a native plant . . ."

*Biston betularia* L.—"A year or two ago, I found a larva of this species feeding on *Buddleia* in my garden: again not a native shrub". —D. LANKTREE, 13 Richmond Road, Oxford.

## *Allophyes oxyacanthae* L.; a New Aberration

By Com. G. W. HARPER, R.N. (Retd.).

*Allophyes oxyacanthae* Linnaeus ab. *occulta* ab. nov.

This remarkable aberration was first captured at m.v. light at Newtonmore, Inverness-shire, on 28th September 1958, and recurred at the same locality on 7th October 1960. In the hope that a wider distribution of this form may be detected by others, I venture to name it and describe it as follows: The silver crescent mark at the anal angle of the forewings is completely obliterated by a large bar of black pigment, and a thin black submarginal line extends from this to a point just short of the costa. The whole width of the basal area of the forewings is dense black. The outer area of the hindwings is shaded with a darker grey than the inner area. The insect ♂ is illustrated in *Proc. S. Lond. Ent. Nat. Hist. Soc.*, 1958, Plate II, fig. 3.

Type ♂: Newtonmore, Inverness-shire, 28.ix.1958.—G.W.H.

Paratype ♂: Newtonmore, Inverness-shire, 7.x.1960.—G.W.H.

I wish to thank Mr. A. L. Goodson, of the British Museum (Nat. Hist.), Tring, for his approval and help with this paper.

Neadach, Newtonmore, Inverness-shire. 1.xii.60.

## Notes and Observations

On 3rd May I visited the Somerset locality for *Xylomiges conspicillaris* L. After searching posts and tree trunks for several hours I had taken only one moth, but it was a female, and it laid about one hundred eggs for me. These duly hatched, and some of the larvae were fed on bird's-foot trefoil while others were given elm shoots; they all did well. In the evening I took one male at light. The next day it rained and I returned home.

On 18th May I visited Studland with Mr. R. W. Watson to look for *Lasiocampa trifolii* Schiff. larvae. It was a lovely day and I managed to collect seven larvae. I kept them in two separate cages. I put sand in the trough of the one containing four larvae, and these eventually pupated in cocoons in the sand and produced four nice moths. The other three pupated but produced deformed specimens.

On 7th July I took a female *Coscinia cribrum* L. on a heath in Dorset and it immediately deposited a few eggs. I fed the larvae on bell heather and withered dandelion. By the beginning of September they had stopped feeding and I sleeved nine healthy larvae on a pot containing heather, growing dandelion, and a few dry leaves. The pot has been placed at the end of a lean-to shelter fully exposed to outside temperature.

On 21st July I visited a locality in Wiltshire at the kind invitation of Captain Jackson, R.N., and was delighted to take a short series of *Thymelicus lineola* Ochs.

On 27th August I noticed a male *Volucella zonaria* Poda on some Buddleia in my garden and, on 29th, a female was taken on a window in the house.

With reference to my note on the hibernation of *Scoliopteryx libatrix* L. (*Ent. Rec.*, 71: 278), this year I found seven at the beginning of October in the same cellar, all clustered together on the roof; the best place to be this autumn!—Brigadier H. E. WARRY, Eastbrook House, Upwey, Weymouth, Dorset. 30.xii.1960.

## The Burnet Complex

By C. A. W. DUFFIELD

This paper was written for publication in 1959 but was held up for various reasons, the main one being a desire to have another season before I committed myself to print, but unfortunately 1960 has been such a bad year for Burnets on the ground in question that nothing can be added.

I have now seen both papers by Mr. Tremewan and I am hoping that he will answer the points raised in mine, and point out the corrections in nomenclature.

The accompanying notes on certain forms of Burnets to be met with in three small and restricted areas are made in the field and from observations this year 1959. But before giving these details it will be as well to go back over the years from 1922 to 1959.

In May 1922, residence was taken up at Pickersdane—a farm house at the foot of Wye Downs and known locally as Broad Downs. There are some 110 odd acres of scrub and hill-side belonging to the house including the Devil's Kneading Trough of *niobe* fame. Much collecting was carried out here. Many of Tutt's records were probably from this area. He collected a good deal on the Crown at Wye and certainly visited the Kneading Trough and it is conceivable that some, anyway, of his records refer to captures on this ground. The Kneading Trough was also well known to, and was a happy hunting ground of Parry of Canterbury, and it is more than likely that some of his records as quoted by Tutt may refer to Burnets taken here. Between the road and the steep escarpment, there is a broad plateau stretching for about half a mile and divided in the middle by a track and a high hedge of bushes and trees. The right hand end of this plateau runs into the Kneading Trough.

The flora is the usual chalk hill flora with much *Helianthemum* and *Lotus corniculatus* but of late with the absence of rabbits, *Brachypodium pinnatum*, locally known as "Torr," has spread with alarming rapidity and is tending now to choke the *Lotus corniculatus* and finer grasses and plants. Bearing in mind what is to follow in the 1959 notes, it is important to remember that no *Lotus uliginosus* is to be found on this ground.

At the end of May 1922, the first year of observations, *trifolii* appeared in some numbers the whole length of the plateau. The varieties and markings were very striking, so much so, that a good deal of attention was given to the Burnets. By the middle of June, all five spotted Burnets had gone. At the end of July and first week in August, the ground furthest away from the Kneading Trough became the headquarters of a large six spotted form with bronzy fore wings and very narrow borders to the hind wings. This was the writer's interpretation *offilipendulae*. In the succeeding years of the Twenties, some of these six-spotted Burnets were noticed early in July and in a few cases at the end of June. At the same time, in late seasons and years of bad weather, *trifolii* prolonged its flight and began to overlap the six spots.

No doubt this was the beginning and cause of what was to follow. For the next few years little was done with the exception of glancing at odd moths for extreme and yellow forms.

After the Second World War, it was decided to replace many of the early captures and also add to the various series of varieties. It was now found with some surprise that six-spotted moths appeared in early June and, in exceptional cases at the end of May.

The upper wings of these moths were of a more bluish bronze tint and with a somewhat broad undulating border to the hind wings. Certainly not the writer's interpretation *offilipendulae*, but a few did appear with the bronzy upperwings and very narrow borders to the underwings, and except for the very early date, appeared referable to *filipendulae*.

About this time, South's paper on *hippocrepidis* was seen and a comparison with my broad bordered form seemed to point to the fact we had *hippocrepidis* here. An examination of fresh material showed the "coloured nervure" passing through the sixth spot. This vein distinct in fresh specimens appears to fade somewhat after a time in cabinet specimens.

A collection of these six spotted forms was now made: those with the bronzy upper wings and narrow border to the under wings being labelled *filipendulae*, while those with the broad borders were labelled as *hippocrepidis*.

It has also been most marked that within the last ten years and with the increase of these early "six spots," cocoons have been appearing high up on the grass stems. Now the cocoons of *trifolii* are hidden deep down in the grass, almost at ground level. They are NOT found high up on the grasses and consequently need much looking for. They are often found when searching the base of the plants for *hemiptera*, etc. Looking back over the 38 years, there is no doubt the colony of true *trifolii* were at their peak from 1943 to 1954 when the grass was short and the food plant *Lotus corniculatus* flourished.

It was also during these years of plenty that the more extreme forms were found. As the colony has got thinner these last few years owing to the decline of the food plant, so has the variation decreased: the common form now being variety *orobi* with the spots separated and distinct. This fact would seem to confirm the theory that extreme variation is an inherent weakness in an overcrowded colony with much interbreeding.

On June 30th 1949, the actual pairing was watched of a female of large size with five spots and a male with six spots. Unfortunately these were killed for the collection and not kept for eggs.

Except for this one female, as far as can be remembered, no more large and late five spotted forms were seen until 1957.

Of course, it is possible and in fact probable that one or two, here and there, escaped notice and have cross paired but they certainly were not in such evidence and numbers until 1957 when eight were taken. These appeared to have many of the characteristics of *lonicerae* and were so tentatively labelled.

With regard to the broad bordered, six spot, the writer feels what he has seen take place over the years confirms South's theory that *hippocrepidis* is a hybrid between *trifolii* and *filipendulae*.

#### A SURVEY OF THE SITUATION IN 1959

We will consider the upper and drier chalky hillside first. There is still a fair amount of *Lotus corniculatus*, the food plant of *trifolii*, growing in the coarse grass.



On 1st June, a few empty cocoons were found at the base of the grass and it was then noticed that *trifolii* was just emerging. They continued to appear for the next few days but in nothing like their old numbers, and with little or no variation. In the afternoon of the 1st, eight were taken and on 6th June, thirteen more. By 9th June *trifolii* was very worn and all but over. A search of just over an hour revealing only five. However, on this day cocoons began to appear high up on the flowering stems of the grass. Twelve of these were taken with the expectation of some form of six spotted Burnet i.e. *hippocrepidis* or *filipendulae* emerging. Two larvae were also found, probably about to spin up. These were taken and preserved.

On 12th June not a Burnet was to be seen. A large flock of rooks had been quartering the hills for some days. This is not unusual at this time of year and it has always been thought they were searching for the chafer *Phillopertha horticola* which usually abounds for a short period at this time. This year the beetle has been absent and it is suggested the rooks cleared the few remaining Burnets.

On 19th June the first pupae of the twelve cocoons collected on the 9th, hatched. But instead of a six spot, a large five spotted form emerged.

21st June. These five spotted Burnets have been hatching the last two mornings between 7.30 and 9 a.m. and only one six spot appeared. This has the distinct green vein running through the sixth spot, and the somewhat broad undulating border of the underwing, diagnostic characters of *hippocrepidis*.

23rd June. The last of these pupae hatched, five having five spots and one six spots with the bronze upperwing and very narrow border to the underwing, typical of *filipendulae*. Thus, of the twelve pupae hatched, ten had five spots and two had six spots on the upperwing. There were no confluent forms. All the spots being well defined with the 4th costal spot small and, in two cases, relatively small. The underwings were somewhat acute as in *loniceræ*.

The absence of early and so-called *hippocrepidis* this year and the appearance of the five spotted form was of great interest and in order to make a further check, a net was taken on the ground on 24th June with the following results: five of the large five spotted form and one typical *filipendulae* were taken. On 4th July eight five-spotted Burnets were netted but no six spots.

On the 6th July three very worn five spots were noted while eight with six spots in comparatively fresh condition were seen. These were all of the *filipendulae* form. Perhaps it was unfortunate these were not taken and preserved.

By 14th July, all Burnets had gone.

It would thus appear than on this chalky hillside with *Lotus corniculatus* as the foodplant, we have four distinct forms of Burnets.

1. A small five-spotted form hatching from pupae low down in the ground and hidden from view. These are undoubtedly true *trifolii*.
2. A large five-spotted form from cocoons high up on the tall grass stems. These are approximately three weeks later than *trifolii*. Can these possibly be *palustris* in such a dry situation?
3. A large six-spotted form with a somewhat broad undulating black edge to the hindwing, and a green vein running through the

6th spot. Colour of the upperwing bluish with a slight greenish reflection. This is the so-called *hippocrepidis* of my collection.

4. A large six-spotted form without the green vein running through the 6th spot and a very narrow border to the underwing. The upperwing distinctly bronzy. This is my interpretation of *filipendulae*.

### LOWER MEADOW LAND

This principally concerns a large 10-acre field down for hay, with a certain amount of *Lotus corniculatus*. On the east side, and on a slightly lower level is a wide belt of somewhat marshy ground with rushes and much *Mentha hirsuta*. In one area of this damp ground, a considerable amount of *Lotus uliginosus* is to be found, much of which is growing up and around the rushes. Two larvae have been found on this and it is undoubtedly the foodplant of the Burnets under discussion, and it is on this plant Tutt states *palustris* feeds.

On 2nd June and 5th June, twelve typical *trifolii* were netted in the hay field and on the latter day, cocoons were beginning to appear on the rushes in the damp area. On 8th June, sixteen of these cocoons were collected with the expectation of five-spotted *palustris*, but it was found on 14th June all the pupae had shrivelled up, as they had been left in a window exposed fully to the rays of the hot sun.

11th June. It was hoped to replace these but on this date twenty-seven cocoons were found to be split open and the pupae removed—no doubt the work of tits. Six were, however, found intact. Also on this date, one large five-spotted Burnet was netted and two six-spots found just emerged.

On 17th June one five-spot was netted and one five-spot emerged from one of the pupae found on the 16th. On the 21st June two five-spots emerged, while on 23rd June three five-spots and eleven six-spots were netted, giving a total of eight five-spots and thirteen with six spots, also on this date the last of the pupae hatched, all being five-spots.

On 6th July, three very worn five spots and nine fresh six spots were taken which brought the total to thirteen five-spots and twenty-two six-spots, but unfortunately not all of these twenty-two were kept, but of those which were kept, eleven were of the *hippocrepidis* form and one *filipendulae*. A comparison of the captures from the two pieces of ground are of interest, and of course differ.

	Hillside	Low-lying wet ground
True <i>trifolii</i> ... ..	21	12
Large five spotted ... ..	19	14
<i>Hippocrepidis</i>		
six spotted ... ..	2	11
<i>Filipendulae</i>		
six spotted ... ..	2	2

Thus unexpectedly the large five spotted form predominated on the high ground, whereas the six spotted forms were more in evidence on the damp lower ground. This was reverse to what was expected. It is presumed that the large five spotted form are *palustris*, but surely *palustris* would not be found on a dry chalky hillside where no *Lotus uliginosus* grows.

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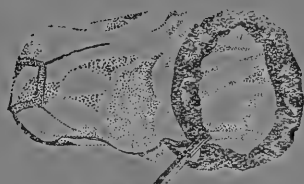
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## A Week's Collecting in Teneriffe

C. J. GOODALL, M.B., B.S., F.R.E.S.

During October 1960 I was fortunate enough to have the opportunity to collect Lepidoptera on the island of Teneriffe, one of the Canary Isles, as part of an "air cruise" to Spain and North Africa.

We arrived there on the 12th, and booked in at the Hotel Las Vegas at Puerto de la Cruz. This town is situated on the north coast at the mouth of the Orotava valley, famous as a banana-growing region and one of the most attractive parts of the island. Also, according to Gurney<sup>1</sup>, it is one of the best centres for collecting. When he was there in 1928 it was known as Puerto Orotava.

The Canary Archipelago consists of seven islands and six islets. Situated in the Atlantic Ocean from 50 to 230 miles west of the coast of Africa, opposite the western end of the Atlas mountains, between latitudes 27° and 28°N., they are volcanic in origin, many of the volcanoes being still intermittently active. Teneriffe is the largest, and being located on the western side of the group receives more moisture than most of the others. This precipitation is assisted as regards the western part by the presence of the highest peak of the archipelago, the 12,180 ft. cone of Teide, the central volcano. The Orotava valley is in this area, and hence the vegetation is comparatively lush.

The island is about 50 miles long and about 30 miles wide at the widest part, being roughly triangular in shape. Mountain ridges run along the greatest diameter, meeting Teide in the centre, so that on travelling inland one also travels upward. There are four zones of vegetation:

- (1) *Maritime*: From sea-level to about 1,000 ft. This is sub-tropical in climate and contains most of the banana plantations.
- (2) *Monte Verde*: From 1,000 to 3,000 ft. The main zone of cultivation, with Citrus, Sugar-cane, etc. at lower levels, and Brassicas, root-crops, Legumes, etc., higher up, merging eventually into extensive areas of Laurel and Chestnut forest.
- (3) *Pine Forest Zone*: 3,000 to 4,000 ft. Entirely forested with several species of pine, including the rare Canary Cedar.
- (4) *Cumbres*: 4,000 to 7,000 ft. Ericas, Brooms, etc., growing sparsely on rough expanses of old and recent lava flows.

Finally, one comes to the cone of Teide, consisting mostly of volcanic ash with practically no vegetation.

The sides of the mountains are scored by deep gullies called "barrancos", which are nearly always dry, but were presumably formed during an extensive pluvial period of climate in early post-glacial times. One of these, the Barranco Martianez, is mentioned by Gurney<sup>1</sup> as particularly favourable for Lepidoptera. As it was only about a quarter of an hour's walk from our hotel it formed my first objective.

The western side was accessible by means of a track along the lower edge of a large banana plantation. Soon after starting along this I was delighted to see a large butterfly sailing round a tall bush covered with small orange flowers, which was later identified as *Lantana*, an Indian shrub which has spread widely in the warmer parts of the world. When netted it proved to be a good specimen of *Danaus plexippus* L. A number of others soon appeared, and several were

taken, mostly in reasonable condition, though some were rather worn. Most were larger than the common North American form. Capture was not as easy as one at first imagined, since although their flight appeared slow and lazy they had considerable speed and could alter course with great rapidity.

Two somewhat smaller specimens were noted and captured. These turned out to be *D. chrysippus* L., both in excellent condition and of typical form. The forms *alcippus* Cram., with white hindwings, and *dorippus* Klug, without the black and white markings at the tips of the forewings, are recorded from Teneriffe, but unfortunately I saw none.

Four other species were noted. By far the most common was *Zizera lysimon* Hüb., which was later found to be abundant in all areas visited at lower elevations. Their flight is always close to the ground, often only a few inches above it, making capture difficult without damaging the net. *Lampides boeticus* L. was found in a very restricted area flying over an expanse of a clover-like plant in a corner of the plantation. It was numerous here, and a series was taken in quite a short time. I was under the impression that it was a piece of waste ground, but this surmise was rudely shattered by the appearance of a very irate plantation worker, who shouted what must have been some very earthy words in Canary dialect and unmistakably indicated that I should vacate the area in as short a time as possible! *Pieris rapae* L. was common and of typical form; while, after leaving the plantation, a good example of *Pararge xiphioides* Staud. flew over the wall into the road.

Next day I took a bus to Santa Ursula, a village on the eastern flank of the Orotava valley about five miles from Puerto de la Cruz. Gurney<sup>1</sup> mentions "a large stretch of virgin ground" near here. I found the only place corresponding with this description, but it proved singularly unproductive, *Zizera lysimon* Hüb., *Lycaena phleas* L. (typical form), *Pieris rapae* L. and one *Pararge xiphioides* Staud. being the only species seen, and these not in any numbers. However, while waiting in the plaza for the bus back to base, I noted a rather worn specimen of *Vanessa callirhoë* Hüb. visiting flowers in the small public garden there, and succeeded in capturing it.

The following day operations were centred on La Orotava, the principal town of the valley, situated at an elevation of about 1,500 ft. and four miles from Puerto de la Cruz. Gurney<sup>1</sup> states that *Pieris cheiranthi* Hüb. occurs in the vicinity. The whole surrounding area was found to be a mass of smallholdings, with very little uncultivated ground, apart from path borders and odd corners. I, therefore, set out along the road winding uphill to the south of the town and systematically examined any likely places.

The ubiquitous *Zizera lysimon* Hüb. was first noted, though not as abundant as on the coast. *Pieris rapae* L. was as common as ever. My first stopping place, however, yielded a most unexpected surprise. It was a small triangle of uncultivated ground between a curve of the road and a small vineyard, and almost the first butterfly noted was a "blue" which was obviously neither *Z. lysimon* nor *Lampides boeticus* L. It was netted, and turned out to be a nice example of *Cyclirius webbianus* Brullé. This remarkable species is confined to the island of Teneriffe, and is quite distinct from any other *Lycaenid*. The most intriguing fact was, however, that the time of appearance is authorita-

tively <sup>1</sup>, <sup>3</sup>, <sup>4</sup>, stated as being in March and June, and the localities mainly in the Pine-forest Zone. No other specimens were seen.

Other species taken were *Pontia daplidice* L., *Pararge xiphioides* Staud., *Lycaena phlaeas* L., *Lampides boeticus* L., and the moths *Galgula partita* Guen. and *Rhodometra sacraria* L. A specimen of *Pieris cheiranthi* Hüb. was seen but unfortunately not captured.

I expected the next day, the 16th, to be of little interest from the entomological point of view, as my wife had recruited me for a bus party to visit Las Cañadas, the old crater of the volcano, about 7,000 ft. above sea-level. Apparently in prehistoric times some gigantic volcanic explosion had blown off the top of the mountain, leaving a crater many miles in diameter. The ash cone of Teide rises from the floor of this for another 5,000 ft. or so.

The ride through the forest zone was very interesting, and I would have been delighted to have stopped at a number of entomologically promising spots on the way. This was not possible, however, and eventually we reached the crater and proceeded to the Parador de Turismo in the most picturesque part of it.

We stayed here for about half an hour to enable us to view the surroundings and imbibe refreshment. I had a look at the small garden of the Parador, and was surprised to see a specimen of *Vanessa cardui* L. and several small dark "blues" flying among the flowers. I netted one of the latter and was delighted to find that it was another example of *Cyclyrius webbianus* Brullé. A number of others were taken, all of this species, and many in reasonably fresh condition. All too soon we had to board the bus for the return journey; nevertheless, I was well satisfied with the results of the trip. In addition to the entomological treasures, I had also obtained some nice colour transparencies and ciné film of the crater and forest zone.

In the evening a visit was made to the Hotel el Taoro, standing in parkland high up behind the town. There was a very pleasant open terrace scattered with tables and lit by mercury vapour lamps. We sat down and ordered drinks, and I noticed a number of moths round the lights. At first I was too self-conscious to attempt to capture any, although I had a pocket folding net and a few glass-bottomed boxes with me. However, two or three glasses of the local fire-water soon dispelled my reticence, and I climbed on to the balustrade to reach the level of the lamp attracting the largest number of moths, much to the horror and consternation of the other guests! I took specimens of *Plusia aurifera* Hüb. and *P. signata* Fab. among others.

I was not well equipped for night work, but on several evenings during my stay I tried "dusking", once in Barranco Martianez and at other times along the footpaths between villa and plantation walls. A number of species were taken, several of which have not yet been identified. Among those named to date the two *Plusias* mentioned above were quite common, also *Hypona lividalis* Hüb. and *Galgula partita* Guen.

On the 17th I again went to the Barranco Martianez and took further examples of *Danus plexippus* L. and *D. chrysippus* L. A single specimen of *Vanessa huntera* Fab. was also seen, but not captured.

We had to return to England on the 19th. I felt well satisfied with the results of the few days collecting, and hope to return again in the

future, perhaps for a longer period and at a different time of the year. The Lepidoptera of the Canary Islands are particularly interesting in view of the relatively large number of unique species and races, and so little appears to have been published on this subject that I am sure many surprises and discoveries await any serious lepidopterist who is in a position to spend a prolonged sojourn there. The occurrence of adult *Cyclyrius webbianus* Brullé in October is an example of this, though as Sheldon<sup>2</sup> concluded, it is likely that all species are continuously brooded owing to the very small temperature range (63°-77°F.) between summer and winter. The only other factor likely to influence the life-cycle is availability of the foodplant, which, ruling out temperature changes, must depend upon moisture and length of day. Fluctuations of the former are partly compensated for by the excellent irrigation systems of the islands, especially Teneriffe, while the day length varies by only four hours or so between the seasons.

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## Some Notes from a 1960 Diary

By NIGEL T. EASTON

**Late emergence of *Anthocaris cardamines* L.:** On 18th June 1959, in my garden at Mortimer, I found four larvae of *Anthocaris cardamines* L., two of them full fed and two nearly so. Three of them were feeding on the seed pods of *Hesperis matronalis* (sweet rocket) and one of them on *Sisymbrium alliaria* (Jack-by-the hedge). A careful search failed to reveal any more and, as they were all of approximately the same size, it can be assumed that they had their origin with the same female; the plants were all within an area of one square yard.

Within four or five days all had pupated on the stems of the foodplant in the cage. They were all of the dirty straw form and were subsequently stored in a 3" glass-topped tin, still spun to the stems of the foodplant, in an unheated room in the house from June 1959 to March 1960.

In April they were removed to a cage, still indoors, and a daily watch maintained. All appeared in good condition, not having dried up, nor were they discoloured in any way. None of the four pupae emerged, however, nor did any of them show signs of colouring up. The unheated room in which they were kept opened into another room which was inhabited during the winter months. The larvarium received daylight from a top light panel measuring about 1½' × 2'. It is well known, however, that most butterflies will emerge in complete darkness and, in addition, the weather was very warm throughout May and continued so until 23rd June, after which summer failed to return.

During the last week in June, needing the cage for other things, I gave the four pupae to my friend, Mr. Anthony Davey, of Bucklebury, Berks. Optimistically, he placed the pupae on the surface of the soil in his outdoor pupa cage and, though they showed no signs of life during the following three months, he did not throw them away.

His surprise at seeing a fine female *A. cardamines* newly emerged in the cage on 1st October may well be imagined! This female was perfect and quite normal in every respect. The remaining pupae, though they maintained their healthy colour, neither emerged nor coloured.

Wild *cardamines* were flying in my garden from 12th May and it is difficult to understand the reason for this retardation. It does go to show, however, that not all reports of alleged second-brood butterflies of various other species are free from doubt. Indeed, which of us meeting an orange tip disporting itself during the first week of October would have believed it to have been a single brooded emergence six months late? Which of us, indeed, be he toper or teetotaler, would have believed his eyes?

**Woodland butterflies in 1960:** Before commenting on the scarcity or otherwise of some of our familiar south Berkshire woodland butterflies, it may be of interest to outline briefly the winter weather, of vital importance to the larval hibernators.

Anticyclonic weather with fog and frost set in on 7th January. By the 9th, snow had replaced fog and the thermometer registered 12 degrees of frost on the 10th. Snow began to fall on the night of the 12th and continued throughout the day on the 13th, giving us a depth of  $4\frac{1}{2}$ " and 7 degrees of frost at night. Further snow began to fall at 4 p.m. on the 14th after a day of unbroken frost and, at 11 p.m., it lay to a depth of seven or eight inches. Our air supply was coming from Russia and the freeze-up was considered the worst for thirteen years in the south. The cold spell continued without a break until 21st January, when mild weather with south-west winds set in. By 24th January the temperature had risen to 52° F. and the mild weather continued until 6th February when the wind became easterly; an intense anti-cyclone over the North Sea moved eastward and frost and occasional snow were with us once again. This cold spell lasted until 20th February when temperatures rose to the forties. It then continued mild until 6th March when cold weather again set in until the 9th.

I mention the above in some detail, firstly to show that there were several well-marked cold spells interrupted by mild weather, giving more temperature fluctuation than usual, and secondly because a recital of effect without cause is only half the story.

There seems little doubt but that the hibernating larvae of most of our fritillaries are susceptible to late cold spells coming suddenly after a mild spell has tempted them to resume feeding. *Argynnis paphia* L. is a frequent victim and I lost every one of my hibernating larvae of this species. Two other breeders had similar trouble and there were few about in the local woods. I am glad, however, to report a growth in the proportion of var. *valezina* Frhk. from 10% to 50% of the female population of this district. *A. euphrasyne* L. and *A. selene* Schf. were in greatly reduced numbers.

To end on a more cheerful note, I have never seen *Limenitis camilla* L. in such numbers in all our south Berkshire woods. Their abundance took me back to the New Forest in the palmy days between the wars. Evidently temperature fluctuation has little effect on the very young larvae. Maybe they are not fooled by premature mild spells in January and February.

*Pararge aegeria* L. appeared quite unaffected by the appalling weather throughout its various broods during 1960.

*Gonepteryx rhamni* L. was in greater numbers than usual in the spring, and their July and August progeny were abundant. This butterfly never seems to be affected by alternate cold and warm spells during the winter, though it is difficult to imagine what it finds to feed upon to restore energy used up in flight during January and February.

*Aglais urticae* L. was scarce in the spring, being unable to re-enter hibernation after being prematurely awakened during the several mild spells of 1960 in early spring.

**Tethering *Hyloicus pinastri* L.:** I was fortunate enough to find a fine female *H. pinastri* at rest with its wings over its back and still limp on a Scots pine trunk near Aldermaston, Hants, during my lunch break at 12.15 p.m. on 11th June 1960. As damage would have resulted had I boxed her then and there, I decided to return after work was finished and to devote the evening to finding a mate for her. I returned at about 5.30 p.m. and found her sitting flat against the trunk in the familiar position and boxed her, but, although I must have searched hundreds of trunks in this and other localities where I had found males in other years, not a single one could I find. The search was continued unsuccessfully on the next day and, as I wished to breed this species, I decided to "tether" her. This I did in the usual way, securing her to the pine trunk at the end of a yard of strong black thread and a drawing pin at 5.30 p.m. on 13th June. I placed her in such a position that she was quite invisible on the trunk at six yards. I have in the past occasionally had females of other species removed from their tethers by birds or bats, and their wings left lying close by on the ground. This was the first occasion on which I had attempted a pairing of *H. pinastri* by this means.

On my way to work on the morning of 14th June, I was glad to see, at 8.45 a.m., she was *in coitu* with a fine fresh male of the grey form, she being of the brown form. They were left undisturbed until the lunch break at 12.45 p.m. when it was seen that they were sitting side by side, a quarter of an inch apart. This female deposited a large number of eggs, a few of which were infertile, but a good number of pupae were obtained by Mr. A. Davey, who undertook to rear them.

Westbury, West End Road, Mortimer Common, Berks.

## A Further Examination of the Life-history of *Opisthographis luteolata* L., (Lepidoptera)

By P. A. DESMOND LANKTREE, F.R.E.S.

The Editor's reference appended to the last paper on this subject (*Ent. Rec.*, 72: 229-235), and drawing attention to Barrett's work which had not been consulted by the present writer, is much appreciated. Bar-

rett's great work was published in parts by Lovell Reeve between 1893 and 1907, and the part concerned (LXIX) came out in 1900. In it there is much information which has to be taken into account, and the relevant material, which has been extracted, will be quoted verbatim and discussed briefly here.

The matter will be dealt with in two sections, the first covering descriptions of the early stages, and the second, the cyclic system. In previously dealing with it, the latter subject would have been more aptly expressed in terms of voltinism, and while this will be done in future, acceptance of the following amendments to the previous paper would be appreciated:

P. 233, lines 4, 6, 11, 13 and 16: for *digoneutic* read *bivoltine*.

P. 233, lines 15 and 38: for *monogoneutic* read *univoltine*.

## THE EARLY STAGES

### *Ovum*

Barrett does not describe this, but as the Editor points out, it is illustrated in colour on plate 277. The large figure depicts the ovum more or less from one side, and from the plate, it would appear to be blotched with reddish or purplish at some stage of its development. What the ground colour was intended to be was difficult to decide from the plate examined: it was certainly a very pale shade, perhaps of yellow.

### *Larva*

Barrett describes five forms of the larva as follows:—

- (i) "Dull purple, shaded with pale grey and red, but without markings . . .".
- (ii) "Dull brown, or blackish, dusted with green towards each extremity, and having a pale greenish crescent-shaped lateral marking on the third segment".
- (iii) "Dull dark grey with indistinct blackish diamond shaped dorsal pattern . . .".
- (iv) "Ferruginous with indistinct pale bluish-grey dorsal diamonds; sides of the middle segments clouded with purplish-grey, and the dorsal line very faint grey".
- (v) "Of the exact colour of a purple hawthorn-twigg, with the tips of the dorsal projection redder".

He then quotes C. Fenn as stating: "All these forms graduate into each other" (as the present writer previously suggested was probable). There is a wide colour-range here, but perhaps they might be tentatively lumped together as modifications of the darker or browner form, amongst which, form (ii) is tending towards the greener form.

Immediately after the larval description, Barrett adds the following note (*sic*): "September to April (hybernating), and as another generation in July and August, sometimes September".

He then goes on to state that, "By prolonged and careful experiments, Professor Poulton and Miss Lilian Gould have succeeded in proving that the varying colours of the larva of this species, from dark brown to green, are directly affected, and to all appearance *caused*, by their surroundings; the green colour being gradually assumed by almost every larva which was fed continuously on very green and light-

coloured food; while those fed on old dark green leaves, with dark twigs, remained in a large proportion dark brown". (The italics are Barrett's.)

No attempt has yet been made to look up any material that may have been published by Professor Poulton and Miss Gould on this subject, and so the conditions under which the experiments were conducted are not known. As Barrett virtually points out though, the colour forms produced appear to be in response to environmental stimuli. Perhaps the mechanism is photo-neuro-chemical and larval pigmentation regulated via the lateral ocelli? It does not appear to have been established though, that the mechanism is independent of variation in the constitution (which includes plant pigments), of the various pupal forms chosen for their external visible differences. It would be interesting to learn the results of breeding these particular larvae with ocelli dyed different colours (if it hasn't already been tried with this species, as the technique is not new), and of attempting to bring about a colour change by changing the dye on 50% of one stock (after a moult if necessary), the other 50% to act as control. The effects of an almost totally dark environment might possibly be produced by an opaque varnish applied in place of a dye\*. Another possible environmental factor to be isolated is that of crowding which, in Professor Poulton's time, was almost certainly not recognised for its effects, and hardly allowed for in his experiments. If crowding were found to produce colour change in 50% (so subjected) of a substantial stock, 50% of these might be "uncrowded" and any reversion or further change noted: the residual percentages in both cases serving as controls.

### *Pupa*

Barrett's description of this stage is as follows: "Colour, black-brown; the dorsal region . . . dull pale olive-brown, or yellow-brown; abdominal segments similar but of a redder colour towards the anal extremity . . .". This would correspond presumably to the "dark brown" form mentioned by Kirby.

Barrett observes that the pupa is contained "In a thin paper-like silken cocoon of a pink or reddish colour, among leaves or rubbish on the ground". The present writer described his two solitary cocoons as greyish-white: perhaps pinkish or reddish is more normal? "Thin" and "paper-like" are descriptions certainly considered apt, and Stokoe's use of the word "thick" is probably meant to convey a density that would result in a paper-like effect.

### *The Life-cycle*

Barrett's quotation from Bree is given in full as follows:—"The Rev. C. R. Bree says, 'it differs from all other British species as far as I am aware in its broods; it emerges from the pupa state at three different periods of the same year—viz., April, June and August; but the June brood is not the produce of the April moths, but of those of the preceeding August, which pass the winter in the larva state, and feed again in the spring, while those from the June brood become pupae in the autumn, and produce moths in April. The specimens which

\*Dermal photo-reception capacity should not be overlooked.



appear in June are always larger and finer in colour and markings than those of the other two broods.' (The italics are Bree's, if not Barrett's.)

After this, Barrett himself states: "There is no appearance of double-broodedness in its more northern range, and doubtless the overlapping broods, noticed in the south, are there absent. So far as is known, it has not been taken further north than Moray and the Hebrides, but in England, Wales and Ireland its abundance is universal".

Now if the Rev. Bree's remarks are considered first, and his alone, the cycle he describes might be portrayed as shown in Fig. 1. It will be noted that no attempt has been made in the figure to show the origin of the August brood, because, in so far as Barrett has quoted him, Bree has not accounted for it himself.

Where does the origin of the August brood lie? Barrett states in one place (after his larval description), and infers in another (just after quoting Bree), that the species is double-brooded. As the products of the April brood are also not accounted for by Bree here either, the simple answer to the question would seem to be in taking Barrett's "double-broodedness" into account by "joining April to August", and this is what has in fact been done in Fig. 2.

At this juncture, the writer would like to recall that the statement (by Barrett, and others previously quoted, some of whom may perhaps have repeated Barrett), that the species is double-brooded, was suggested to be one that seemed to require confirmation. If the system derived in Fig. 2 from the joint statements of Barrett and Bree is the correct one, the description "double-brooded" by itself would only fit part of the case, and for this Barrett is not to be blamed. If Fig. 2 should be correct though, a remarkable state of affairs would seem to exist, for, as far as the southern counties of Britain are concerned, the species would then appear not only (i) to be univoltine and bivoltine in alternate years, but (ii) to hibernate as larva and pupa in alternate years, and (iii) to have both "streams" or cycles going at once (since Bree said "it emerges from the pupa state at three different periods of the *same year*"), and (iv) to have each cycle necessarily out of phase with the other for the whole system to work.

Barrett's observation that "there is no appearance of double-broodedness in its more northern range, and doubtless the overlapping broods noticed in the south, are there absent", seems to indicate further complications. Unfortunately, he does not appear to have given dates of emergence in the north, but supposing they occur in June in one year, and pupal over-wintering ensues for the offspring—what happens the next year? Are there only adult emergences every two years, or has the cycle there become so adapted as to be regularly univoltine with a fixed and specific hibernating stage?

For that matter, if the broods overlap in the southern British counties and their respective members should interbreed, what, it might be asked, would be the percentage cyclic products of an "April  $\times$  June", or a "June  $\times$  August" pairing (as might be loosely interpreted from Fig. 2)? It will be recalled that the various eclosion times reported for the species were summarised in the last paper into

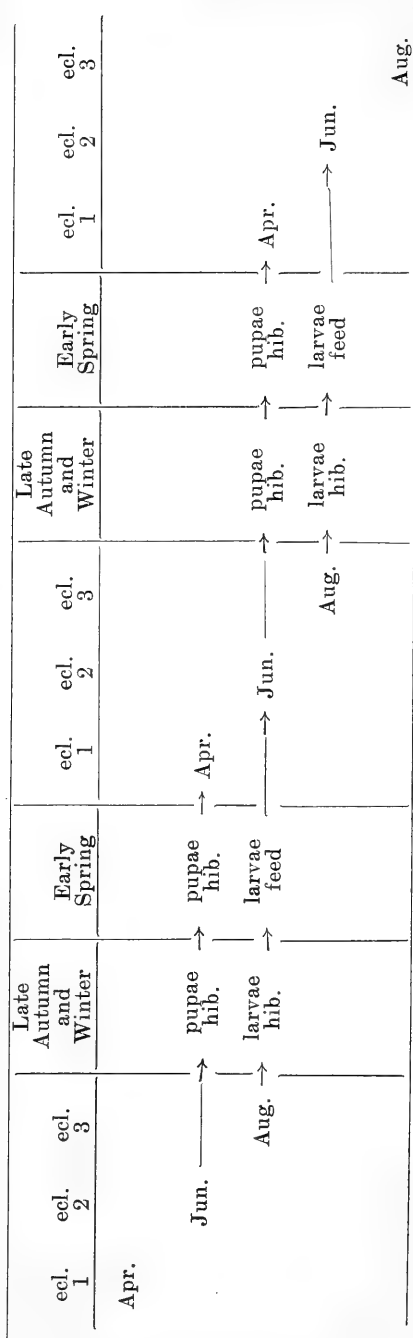


Fig. 1.

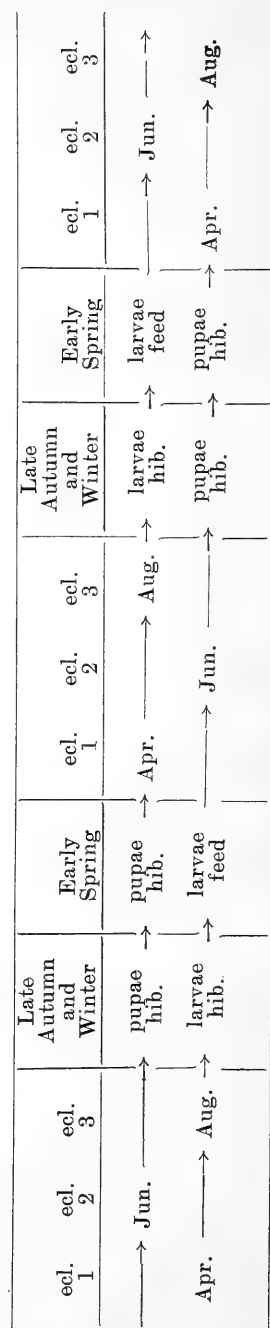


Fig. 2.

the statement that "imagines have been recorded from May to September inclusively, or even later".

In a footnote to the previous paper (*loc. cit.* 231), it was pointed out that Newman and Leeds recorded in the last column of their notes on the species, that the "larvae feed up irregularly". It was also suggested by the present writer that this might indicate a split development rate for the larvae. If, however, the observation of Newman and Leeds was based on, for example, the results of larva-beating in July (see Fig. 2), disproportionate larval size could be accounted for by the separate cycles already discussed, and in which the broods are, it will be seen, staggered. For one reason yet though, the possibility of a split larval development rate should not be entirely discounted, and that is, from the published material so far examined at least, it is not known or how many progeny, from the total number possible from a single parent female, Bree based his observations. Further, it will do no harm again to recall that Bree (as far as quoted by Barrett), did not comment at all on the products of the April brood, and the origin of the August brood.

There is no reason to doubt the direct observations of any of these authors, they are no doubt correct, as far as they go, but until the numbers involved of any specific brood are known, it would seem prudent to treat these observations with some reservation, i.e., as being contributory to, but not necessarily a complete explanation of the whole cyclic system: even the separate cycles shown in Fig. 2 might yet be shown to have a so far unrecorded inter-relationship via cross-pairings.

Under the circumstances, it might be wiser to adopt Fig. 1, depicting as it does what Bree's observations alone have established, as a working basis for any future breeding experiments, while Fig. 2 may still be borne in mind, not forgetting how it was derived.

There still seems much to be gained from breeding *luteolata* on a large scale, and as the species is widely distributed and often abundant, even in cities, perhaps it will not be too long before this is attempted.

#### REFERENCE

Barrett, C. G. 1893-1907. *The Lepidoptera of the British Islands*, Vol. 6: Part LXIX, 1900.

#### ACKNOWLEDGMENT

The identity of the plant described in the previous paper on *luteolata* (*Ent. Rec.*, 72: 230), and which the Editor tentatively suggested might be a species of *Berberis*, has been kindly confirmed as such from a recently obtained specimen by Dr. K. R. Lewis of the Department of Botany at Oxford to whom the writer is gratefully indebted.

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HYPONOMEUTA RORELLA HUBN. IN GLOUCESTERSHIRE.—A specimen of this moth came to my mercury vapour light in my garden at Rodborough, Glos., on 22nd July 1959. This species is not recorded in *Microlepidoptera of Gloucestershire* by T. Bainbrigge Fletcher and C. Glanville Clutterbuck.—L. PRICE, Springdale, Rodborough Avenue, Stroud, Glos. 9.i.1961.

# The Recurrence in Britain of *Recurvaria piceaella* Kearfott

By A. A. ALLEN, B.Sc.

On 6th July 1959 I took at mercury-vapour light here (Blackheath, London, S.E.) a small variegated Gelechiid moth of a species unknown to me; it appeared to come close to the common apple-feeding *Recurvaria nanella* Hübn. but to differ rather widely in colour and markings. When in due course I brought it with others to Mr. S. Wakely for his opinion, he concluded it must belong to that genus, but could find no European species to fit it. Later, however, I read in the supplement (1958, p. 5) to Mr. L. T. Ford's *Guide to the Smaller British Lepidoptera* that a specimen of a *Recurvaria* new to Britain had been taken at Pinner, Middlesex, in June 1952 by Mr. W. E. Minnion, and identified (with very considerable reserve, as Mr. J. D. Bradley later informed me) as the North American *R. piceaella* Kearf. The moth was exhibited at the Annual Exhibition of the South London Entomological and Natural History Society on 31st October 1953, as reported in the Society's *Proceedings* for 1953-54, p. 36. It therefore seemed highly probable that my insect was the same species—a surmise which proved correct when, at the British Museum (Nat. Hist.), Mr. Bradley and I compared it with the Pinner example, which had been placed in the Bankes collection of British Microlepidoptera. The two moths were seen at once to be conspecific, but, as a further check, Mr. Bradley kindly made a genitalia-preparation of my specimen, and found the result identical with that of the first—both being males.

It appears that the genus has many species in various parts of the world, whose original descriptions are not always such as to allow of confident determination, and that *R. piceaella* is a case in point. Pending a revision, therefore, the identity of our species must remain open to doubt; meanwhile, some provisional designation being required, it is best referred to by the above name for the present. At all events it is fairly certainly an exotic, perhaps attempting to gain a foothold in this country. A single specimen might easily have been a chance introduction, but the occurrence of a second seven years later makes this less likely, and further captures would not now be surprising. Assuming the species to be the true *R. piceaella*, it should—to judge from the (ill-formed) name bestowed on it—be a conifer-feeder, and it is noteworthy that the number of these found here has increased largely with the extended planting of their host trees during the present century; one thinks of such recent instances as *Lozotaeniodes formosana* Fröl. and *Ptycholomoides aeriferana* H.-S. The Pinner specimen was rather badly damaged, but the Blackheath one is in fresh condition and looks as if bred locally. Several conifer-feeding species have occurred at the light which attracted the latter insect.

The ensuing description should suffice for recognition:—Size and shape as *R. nanella* Hübn., but ground colour and whole aspect much yellower (there is no tinge of this colour in *nanella*) and with much less black or fuscous intermixed. Head whitish-ochreous, thorax ochreous, both unspotted (in *nanella* they are white, spotted with fuscous, the thorax so heavily as to appear dark grey). Antennae much stouter,

annulations less distinct. Forewings light ochreous-brown, with three irregular blackish fasciae outwardly bordered with whitish; the middle one very incomplete and ill-defined, centrally interrupted by a longitudinal fuscous dash in disc extending towards the outermost fascia; basal fascia alone formed much as in *nanella*; only the outermost one quite complete and reaching dorsum, its whitish border well-defined, projecting centrally towards termen, thence bent inwards at a right angle, then out to meet the costa perpendicularly; stigmata merged in the fasciae; some blackish dots near termen, but no irregular white line subparallel to and just inside it as in *nanella*, and terminal cilia without the inner white band and two outer fine fuscous lines present in *nanella* (in fact, the markings of the entire apical half of the wing are very different in the two species). Hindwings appearing more thinly scaled on disc than in *nanella*.

I should like to take this opportunity of thanking the two gentlemen named above for their willing and valued assistance in connection with this and other more or less problematic specimens submitted to them.

## Collecting in the Island of Mull, June 1960

By Rear-Admiral A. D. TORLESSE, C.B., D.S.O.

To anyone who likes peace and quiet, the Western Isles have much to offer, and so, when we heard of a cottage to let for the month of June 1960, my wife and I decided to spend our holiday in the Island of Mull.

The long spell of fine weather which had lasted from early May, and which was to prove the only real "summer" of 1960, broke on the 7th of June as we headed north from the Midlands bound for Bridge of Weir, where we spent the night with friends. Next day we had time to make the journey to Oban by a circuitous route via Inverary and Lochgilphead, finding the Argyllshire countryside bright with the yellow iris, which we were also to find everywhere in Mull, growing in places even on the seashore. At Oban our car was quickly swung on board the Mull boat, where with two others it filled the small forecabin, and we were off in the evening sunshine on the two-hour trip across the Firth of Lorne and up the Sound of Mull, calling at several small places en route, to arrive alongside the quay at Tobermory in a down-pour. With a late evening arrival in mind we had arranged to spend our first night at the comfortable Western Isles Hotel, perched high above the harbour.

Mull is an island of some size; it is nearly fifty miles from Tobermory in the extreme north to the south-west tip at Fionphort where the motor boats ply across the narrow strait to Iona. There is little level ground in the whole island. Ben More rises to over 3,000 feet, and half a dozen other peaks to well over 2,000 feet. Almost every part of the island can, however, be reached by reasonably good, single-track, metalled roads; other roads are mostly little more than tracks, and hard on motor vehicles other than those of the 'landrover' type. The economy of the island has for long depended mainly on sheep, and over-grazing has caused the loss of much of the heather and helped the

invasion of bracken, which now infests the lower slopes everywhere. Fifty years ago Mull was an island of large estates, a playground for the wealthy Clyde magnate. Now most of the estates have gone, and a considerable part of the island is either owned or leased by the Forestry Commission, which is busy planting it with conifer forest. There are deer, but now that the moors are no longer kept free the swarming carrion-crows and gulls have virtually ended most species of game-birds. Sea-birds there are in plenty, and ducks too, especially the Sheld Duck, and one can drive along the shores of the quiet sea lochs without disturbing the fishing herons.

My principal quarry was *Zygaena achilleae* Esp., and I spent a good deal of time looking for it. I had no clues except that it had been found on the mainland in the Oban district, a description of the kind of locality favoured, and that my date of arrival in the island should about coincide with its appearance if it was there. I expected to find *Zygaena purpuralis* Brün., and hoped that I might come across *Erebia epiphron* Knoch. In the 367 square miles of Mull I found numerous localities which might have sheltered all three; in the event, I found the two burnets but not the butterfly.

Our first day in Mull was fine, but a walk in the woods near our cottage produced only *Pieris rapae*, *Pararge aegeria*, *Coenonympha pamphilus*, and a single *Eustrotia uncula* Clerck disturbed from a boggy patch. For the next nine days the weather was unsettled, but only two days were hopelessly wet, and some part of most days was usually bright enough for butterflies to appear. The nights, however, were mostly damp and rather cold. We explored the island, looking for suitable localities to investigate again in better weather, and I spent two days with the brown trout on one of the moorland lochs. In addition to the butterflies already mentioned, *Pieris brassicae*, *Argynnis selene* and *Polyommatus icarus* were seen, but no burnets. I ran my m.v. trap in the garden of our cottage in the woods on most nights, and on a number of nights, both promising and otherwise, I took my portable m.v. lamp to the neighbouring moors, but on the whole the results were rather disappointing; I got neither the number nor the variety of moths hoped for.

The weather began to improve on 18th June. On that day I found the first burnet, a single *Zygaena filipendulae* Linn., and added *Argynnis aglaia* to the list of butterflies. However, next day a promising locality yielded no burnets whatever, and little else either. The 20th promised to be a fine, hot day, and I set out to climb Ben More, a stiff walk of about four miles from the sea shore to 3,169 feet, which took me about three hours to the summit. Again, no burnets were to be seen, and very few butterflies, though there were plenty of spots which looked suitable for *E. epiphron* if it were present. There were, however, some interesting Pyrales. A single *Hapalia alpinalis* Schiff. ssp. *uliginosalis* Steph. was taken about half-way up; had I recognised this moth at the time I should have looked for more. Several *Crambus ericellus* Hübn. were taken rather higher, and at about 2,500 feet *Crambus fucatellus* appeared, easily disturbed and flying briskly over the sparse tufts of wiry grass and the patches of *Alchemilla alpina* (Alpine lady's mantle), which seemed to be about the only vegetation at this height, and present in some numbers at the very summit. Fly-

ing round the cairn at the top was a single Red Admiral, which my wife remarked later must have been there as a compliment to me! Apart from the butterfly, *C. pamphilus* up to about 2,000 feet, and *Odezia atrata* Linn. and *Hapalia decrepitalis* H.S. lower down, were the only other species noted.

After this, except for one wet day, the weather was fine and sunny, and I was able to pursue my search for *Z. achilleae* with more hope of success. On 21st I found *Zygaena purpuralis* in profusion, but apparently confined to a distinctly restricted area several square miles in extent. In view of its abundance here I was surprised only to find this species in one other place in the island. With *purpuralis* were a very few *filipendulae*, but exhaustive search failed to reveal *achilleae*. Next day both *Coenonympha tullia* Müll. var. *scotica* and *Maniola jurtina* Linn. appeared for the first time, and *A. aglaia* was out in numbers, but a search of suitable localities on this day and on 24th and 26th yielded no burnets at all, and by now it seemed likely that *Z. achilleae*, if it was present in Mull at all, must be over. On 27th, in an area recently cleared and replanted, I found *A. aglaia* flying in great abundance, a very beautiful sight to see. There were also a very few newly emerged *Eumenis semele* of a fine dark form.

On 28th June I visited several new places, and late in the afternoon came upon a flowery slope where many burnets were flying. With numbers of *purpuralis* and a few *filipendulae* were a few insects which, though very worn, I had little doubt were *Zygaena achilleae*, and so it proved. Next day, our last in the island, I searched the original *purpuralis* ground once again for *achilleae*, without result. With so many apparently suitable places it is difficult to account for the restriction of *purpuralis* to these two areas, and indeed of *achilleae* to the one.

The following is a list of some of the moths taken at m.v. light, either in the cottage garden or at various places in the neighbourhood, during the three weeks of our stay:—

*Laothoe populi* Linn., *Cerura furcula* Linn., *Notodonta dromedarius* Linn., *Lophopteryx capucina* Linn., *Phalera bucephala* Linn., *Clostera pigra* Hufn., *Thyatira batis* Linn., *Asphalia diluta* Schiff., *Philudoria potatoria* Linn., *Bena prasinana* Linn., *Spilosoma lubricipeda* Linn., *Diacrisia sannio* Linn., *Colocasia coryli* Linn., *Apatele leporina* Linn., *A. menyanthidis* View., *A. rumicis* Linn., *Lycophotia varia* Vill., *Amathes c-nigrum* Linn., *A. ditrapezium* Borkh., *A. triangulum* Hufn., *Diarsia brunnea* Fabr., *D. festiva* Schiff., *Ochropleura plecta* Linn., *Anaplectoides prasina* Fabr., *Polia nebulosa* Hufn., *Ceramica pisi* Linn., *Diataraxia oleracea* Linn., *Hadena thalassina* Rott., *H. trifolii* Rott., *H. glauca* Hübn., *H. bicruris* Hufn., *H. cucubali* Fuessl., *Eumichtis adusta* Esp., *Apamea crenata* Hufn., *A. hepatica* Hübn., *Euplexia lucipara* Linn., *Coenobia rufa* Haw., *Leucania pallens* Linn., *Petilampa minima* Haw., *Rusina umbratica* Goeze, *Rivula sericealis* Scop., *Plusia bractea* Fabr., *P. festucae* Linn., *P. iota* Linn., *P. pulchrina* Haw., *Abrostola tripartita* Hufn., *Sterrhia aversata* Linn., *Scopula ternata* Schrank., *Dysstroma truncata* Hufn., *Xanthorhoe montanata* Borkh., *X. designata* Rott., *Calostygia pectinataria* Knoch.,

*Perizoma albulata* Schiff., *P. minorata* Treits., *P. blandiata* Schiff., *Eupethecia pulchellata* Steph., *E. nanata* Hübn., *E. subumbrata* Schiff., *Gymnoscelis pumilata* Hübn., *Dyscia fagaria* Thunb., *Campaea margaritata* Linn., *Semiothisa notata* Linn., *Gonodontis bidentata* Clerck, *Biston betularia* Linn., *Bupalus pinaria* Linn., *Hepialus fusconebulosa* Deg., *H. lupulina* Linn., *H. humuli* Linn.

## Pontresina, 1960

By R. F. BRETHERTON and BARON DE WORMS

Early in the present century Pontresina was regarded as one of the classic centres for Alpine collecting, and much was written about it in English periodicals; but in recent years references to it have been few. The village stands at about 1,800 metres (5,900 feet) on the side of the Bernina Valley, about three miles above its junction with the main Engadine. In all directions there are excellent collecting grounds, some of which run up to the snowline, and the electric railways make it easy to go further afield, especially over the Bernina Pass to the south side of the main chain of the Alps. The lepidoptera include a number of species which it is difficult to get elsewhere, as well as some interesting local forms; and these have to be sought amid a variety of Alpine plants in surroundings which are of great natural beauty.

The authors spent effectively thirteen days there, from 2nd to 15th July 1960. Although June had apparently been a good month, we had very bad weather. Only one day was sunny throughout; four were rendered altogether useless for collecting by cloud and rain; and on all the others, after more or less sunny mornings, conditions deteriorated sooner or later after noon. We were also frustrated by the weather on one or two admittedly rather half-hearted attempts at working with paraffin lamps at night. But in spite of all this we saw enough lepidoptera to make it worth while to record our experiences.

Having left London by train on 1st July, we broke our journey early the next morning at Weesen, at the western end of the Wallensee. According to the old records, this used to be a good place to find the extremely local marsh Blues, *Maculinea teleius* Bergstr. and *M. nausithous* Bergstr., and also *Coenonympha tiphon* Rott. After breakfasting at the station, we walked across the river bridge to the luxuriant meadows which border the end of the lake. We came on the Blues almost at once, sitting or flying rather sluggishly around clumps of *Sanguisorba officinalis*, which is the food of the larvae before they are, like those of *M. arion* Christ., taken into ants' nests. *M. nausithous* was scarce, and we took only nine between us, some of them damaged; *M. teleius* was commoner and apparently less local. Scything of the meadows was already in progress, and seemed likely to cover almost the whole area; but as this presumably happens every year it is apparently not fatal to the survival of these insects. They may be more threatened by the large-scale raising of the land to double the railway track and to form goods sidings, which was also going on. Other butterflies were neither numerous nor notable, though they included stray specimens of *Reverdinus alchymillae* Hübner and *Erebia*



*stygne* Ochs. We saw nothing of *C. tiphon*. Among the moths we took *Atolmis rubricollis* L. and *Zygaena viciae teriolensis* Speyer. However, when we withdrew to eat lunch and catch the train on to Chur and Pontresina, we felt that our bag of Blues was a sufficient reward for our morning's work.

At Pontresina we began operations on 3rd July by exploring the lower part of the Rosegtal, which begins opposite the village and reaches up for some eight miles to the glaciers beneath the Piz Tschierva and the Piz Roseg. The valley was, indeed, our main collecting ground, and we visited it on no less than five days. It is blessedly closed to motor vehicles, and the only transport, other than one's own feet, is provided by droschky-like carriages or by an antediluvian horse brake which does the journey twice a day to the Roseg Restaurant. The approach through the forest on the east side was rich in small moths such as *Cidaria montanata* Schiff., *Entephria infidaria* de la Harpe, *Coenotephria luctuata* Schiff., *C. incultraria* H-S., *C. obsoletaria* H-S., *Calostygia turbata* Hübner, several species of *Psodos*, and a very beautiful black and yellow Pyrale, *Catastia marginata* Schiff.; and we found an example of that fine Alpine Noctuid, *Eremobia maillardi* Geyer, sitting by the path. If one started up the main track on the west side of the valley, the first attractions were marshy meadows full of the commoner Blues, Coppers and Erebias and large numbers of *Pyrgus serratulae* Rambur, which was the dominant Skipper almost everywhere, many of the females being of the almost spotless form, *caecus* Freyer. There were also some *Brenthis ino* Rott. and *Aricia agestis* Stgr., with many *Polyommatus eros* Ochs. and dark *Melitæa diamina* Lang. We took here a few *Erebia medusa alpestris* Warren, though unfortunately they were nearly over. Further on the track passes mainly through forest, and we usually found it best to follow the path on the eastern bank of the stream between the first and second bridges. Here a stretch of scrub birch on a steep slope produced single specimens of *Pyrgus malvoides* El. & Ed. (a fine female aberration), and *Caterocephalus palaemon* Pall. It was surprising to see these species at all so high up, but one of us remarked that the ground was otherwise very like that frequented by the Scottish race of *C. palaemon*. After a little, the low birch gave way to Alpine Alder (*Alnus viridis* Chaix), and there we found the headquarters of *Euphydryas intermedia wolfensbergeri* Freyer. They were very common, but both sexes spent most of their time sunning themselves on alder leaves, and the males in particular were not at all easy to catch during their rapid flights from one perch to another. They only occasionally settled on flowers, usually those of the yellow *Arnica montana* L. This slope was also frequented by some rather worn *Pararge hiera* F. (*petropolitana* F.), and we also caught there our first *Clossiana thore* Hübner, though a better place for them, which we only found on our last visit, was in rocky dells in the forest about half a mile further up the valley, where they flew with *E. euryale* Esp. and *Clossiana titania* Esp. Beyond the alders the path flanks a small marsh, which was full of *Erebia pharte* Hübner and *Boloria napaea* Hoffmg., and then enters a large open clearing beneath a flowery slope. This was good for *Eumedonia chiron* Rott. and *Maculinea arion* in the magnificent dark from *obscura* Christ. Here, too, there was a spectacular growth of the two yellow gentians, *Gentiana lutea* L. and *G. punctata* L. with many apparent hybrids, and

by working among these we managed to get a few *Maculinea alcon* Schiff., though they were certainly scarce. The rare Noctuid, *Sympestis funesta* Payk., was found at rest on a flower. The last mile of the track before the Roseg Restaurant was partly diverted by extensive dam-building operations, and we did not find it productive.

On 11th July, a brilliant morning, we took the early horse bus as far as the Restaurant and explored the upper valley nearly to Tschierva Hut. After a brief examination of a joint colony of *Parnassius apollo* L. and *P. phoebus sacerdos* Stichel by the bed of the stream, we worked for a long way up an easily rising path, which yielded a few *Erebia mnestra* Hübner and *E. gorge triopes* Spr., and more of *E. tyndarus* Esp., *Pieris bryoniae* Ochs., *Mellicta varia* M.D., and *Euphydryas cynthia* Schiff., though no species was really numerous. We then turned up a steep grass slope and, after a stiff climb, came on our main quarry, a flourishing colony of *Erebia flavofasciata* Heyne. This was very localised among long grass by a small stream, where the steepness of the slope made it difficult to stand up, let alone follow the insects as they were caught by the breeze. However, in a couple of hours we secured good series of the males, which were fully out: of the females we only caught three, one being paired. Variation on the underside of the males was considerable, ranging from those in which the yellow band on the hindwings was reduced to a few spots—*f. warreni* Vty.—to a few in which it was almost as broad as in the typical form from Canton Ticino; but in most the band, though complete and bright, was narrow—*f. thiemei* Bartel. The insect had its peculiar haunt almost to itself, the only other butterflies present being a few *E. epiphron aetherius* Esp. and *Euphydryas debilis glaciegenita* Vty. Unfortunately, just as we finished our work here the sky clouded and we could do little more collecting on the long walk home.

Owing to the bad weather we made only one expedition on the attractive mountains immediately behind Pontresina. On 5th July we went up the cable railway to the Muottas Muraigl and worked round for several miles on the high path, at a general altitude of 2,300 metres, to the Schafberg Restaurant, and then dropped steeply down to Pontresina. But there were only gleams of sunshine, and we saw only a few *Synchlœ callidice* Esp., *Euphydryas debilis glaciegenita*, *E. cynthia*, *Erebia pandrose* Borkh., and one *Colias palaeno* L., though we also collected webs of first instar larvae of *E. debilis* and full-bred larvae and pupae of *E. cynthia*. The Schafberg is also the classical locality for *E. flavofasciata*, but in these poor conditions we saw nothing of it. However, as we descended the clouds cleared for a time and the break yielded *Papilio machaon*, *Parnassius apollo*, many *Maculinea arion*, *Philotes baton* Burgstr., and a few *Mellicta athalia* Rott. which are intermediate in appearance between the type and ssp. *celadussa* Frhst. (*pseudathalia* Rev.). This fits in with the remark by Dr L. G. Higgins (1955) that this part of the Engadine is the borderland of the two forms, which until recently were thought to be specifically distinct.

We made two visits to the south side of the watershed, over the Bernina Pass. On 6th July we took the train to the Alp Grum, where there is a magnificent flowery meadow on the edge of the forest at about 2,100 metres. But again there were only gleams of sunshine, and

we had to content ourselves with a few *Erebia alberganus ceto* Hübner, one or two *Maculinea alcon*, and good series of female *Coenonympha satyrion* Esp. The grass was full of small moths, including *Scopula immorata* L., *Hapalia alpinalis* Schiff., and a Plume, *Stenoptilia coprodactyla* Zell.

On the way home we added a little to our captures by de-training at the Bernina Hauser and walking down the main valley as far as Morteratsch; but again the sun disappeared as we came on to the best ground. Four days later we again went over the Bernina Pass and descended as far as the beautiful little lake at Le Prese at only 1,000 metres up and nearly on the Italian frontier. We had hoped to see something of the sub-alpine lepidoptera here, but in poor conditions not much was flying though we saw *Iphiclides podalirius* L., many worn *Parnassius apollo* and *Mellicta athalia celadussa*, and a few *Erebia ligea* L., *Coenonympha arcania* L., *Heodes virgaureae* L., *Lysandra coridon* Poda. Interesting Burnets were the brilliant *Zygaena lonicerae* major Speyer, *Z. transalpina alpina* Bdv., and *Z. purpuralis zermattensis* Speyer. We broke the return journey at Cavaglia, below the Alp Grum, and in half an hour's sunshine we collected fine series of *Parnassius phoebus sacerdos* Stichel, *Palaeochrysphanus hippothoe* L. and several species of *Erebia* in the rich meadows round the station. A Forester was also common, which Mr. Tremewan has identified as *Procris obscura* Zeller. The flowers were spectacular, and a photograph was taken of a clump of *Orchis*, probably *O. ustulata* L. mixed with another species, which was fully six feet across.

On 13th July, which turned out to be our sunniest day, we drove early to the top of the Albula Pass (2,300 m.), on the watershed between the Inn and the Upper Rhine, and after collecting for several hours there we walked down the north side of the Pass to the railway station at Preda (1,800 m.). Our chief objective was the smallest European Fritillary, *Mellicta asteroides* Freyer. But it proved to be very scarce, and we had to work hard on the steep slopes to get a short series of both sexes. Part of the difficulty was to spot and follow them among the large numbers of *M. varia* M.-D. and *E. debilis glaciegenua*. *Boloria pales* D. & S., *E. cynthia*, and *Erebia pandrose* Bkh. were also very common with *Agriades glandon* de Pr. On the nearby scree we spent some time stalking *E. pluto anteborus* Frhst., a splendid large race with an expanse of over two inches. But few were caught: their habit was to work across the scree, settling at intervals but always rising when approached, and when they reached the edge sweeping back again in powerful flight to repeat the process. As we worked down towards Preda, the meadow insects were very abundant. *E. melampus* swarmed, there were many *E. tyndarus*, and we took *E. oeme noctua* Frhst., which apparently does not occur round Pontresina itself. We also took the giant *Lysandra amandus libionis* Vty., which we had already met in the Rosegtal, many *Boloria napaea*, a single *Colias palaeno*, and *Pararge maera* L. which we had not seen elsewhere. There were also many small moths, including *Crambus myellus* Hübner. Altogether, it was certainly our richest day.

When we left Pontresina on 15th July—in a steady downpour of rain—we had seen something, though not nearly enough, of most of the local specialities which had been the object of our visit. One which we were sorry to miss was *Boloria aquilonaris* Stichel: we had set out

for its reputed haunts in the *Oxyococcus* bogs in the direction of St Moritz no less than five times, but had always been driven back empty-handed by cloud or storm! We had also done very little with the very high level species, which in this poor and late season were hardly beginning to emerge. Nevertheless, it had been a rewarding expedition.

Ottershaw, Surrey. 24.xii.60.

## Flies Visiting the Flowers of Wood Spurge, *Euphorbia amygdaloides* L. (Euphorbiaceae)

By L. PARMENTER, F.R.E.S.

Recently I noticed a sentence in Clapham, Tutin and Warburg's *Flora of the British Isles* under *Euphorbia*: "All our species are probably pollinated by flies". I next turned to Knuth's *Handbook of Flower Pollination* and noted under *E. amygdaloides* that the only visitor recorded was "Bonnier saw the honey-bee frequently sucking". It seems, therefore, worth listing the species of flies (diptera) I have found visiting this flower.

### BIBIONIDAE

*Bibio varipes* Mg.

### BOMBYLIIDAE

*Bombylius major* L.

### EMPIDIDAE

*Empis tessellata* F.

*E. trigramma* Mg.

### SYRPHIDAE

*Baccha obscuripennis* Mg.

*Platycheirus albimanus* F.

*P. peltatus* Mg.

*P. tarsalis* Schum.

*Melanostoma mellinum* L.

*Sphaerophoria scripta* L.

*Leucozona lucorum* L.

*Syrphus albostriatus* Fln.

*S. elegans* Harris

*S. euechromus* Kow.

*S. luniger* Mg.

*S. nitidicollis* Mg.

*S. ribesii* L.

*S. venustus* Mg.

*S. vitripennis* Mg.

*Rhingia campestris* Mg.

*Pipiza fenestrata* Mg.

*P. noctiluca* L.

*Cheilosia bergenstammi* Beck.

*C. impressa* Lw.

*C. paganus* Mg.

*C. variabilis* Panz.

*C. vulpina* Mg.

*Volucella bombylans* L.

*Eristalis arbustorum* L.

*E. pertinax* Scop.

*Myiatropa florea* L.

*Syritta pipiens* L.

*Eumerus tuberculatus* Rond.

### SCIOMYZIDAE.

*Sciomyza griseola* Fln.

### TACHINIDAE.

*Lypha dubia* Fln.

*Gymnochaeta viridis* Fln.

*Ernestia nielsenii* Vill.

*Echinomyia fera* L.

*Phorocera assimilis* Fln.

*Smidtia conspersa* Mg.

*Paraphorocera stabulans* Mg.

*Pales pavidus* Mg.

### CALLIPHORIDAE.

*Sarcophaga carnaria* L.

*Pollenia rudis* F.

*Lucilia caesar* L.

*Calliphora erythrocephala* Mg.

*C. vomitoria* L.

### MUSCIDAE

*Musca autumnalis* Deg.

*Phaonia serva* Mg.

Generally, one to two individuals per species were found on the flowers, but I see that on 31st May 1948, at Coulsdon, Surrey, I found 27 species present with four most numerous:—*Calliphora vomitoria* 50, *Echinomyia fera* 12, *Syrirta pipiens* 8, and *Empis tessellata* 5. At a later occasion, on 13th May 1950, in the same copse, the most numerous visitor was *Leucozona lucorum*. Five were seen and I noted at the time that they visited flower after flower but keeping to this species of *Euphorbia*.

Dr. C. D. Day has obviously found that plant attractive to Tachinidae and Calliphoridae for he records in his *British Tachinid Flies*, 1948, a further 45 species. These are listed below, but where the generic or specific name used by Dr. Day differs from that of Dr. F. Van Emden's List of 1954, the former is added in square brackets.

## TACHINIDAE

*Minella* [Dufouria] *chalybeata* Mg.

*Graphogaster* [Syntomogaster] *fasciata* Mg.

*Xysta cana* Mg.

*Allophora hemiptera* F.

*A.* [Hyalomyia] *obesa* F.

*Macquartia chalconota* Mg.

and var. *nitida* Zett.

*Zophomyia temula* Scop.

*Pelatachina tibialis* Flin.

*Wagneria latifrons* Zett.

*W. lentis* Mg.

*Thelaira nigripes* F. [leucozona panz.]

*Nemoraea pellucida* Mg.

*Ernestia rudis* Flin.

*Linnaemyia* [Micropalpus] *pudica* Rond.

*Servillia lurida* F.

*Viviana cinerea* Flin.

*Blondelia nigripes* Flin.

*Degeeria luctuosa* Mg.

*Oswaldia muscaria* Flin.

*Actia crassipennis* Mg.

*A. pilipennis* Flin.

*Voria trepida* Mg.

and var. *curvinervis* Zett.

*Tachina sorbillans* Wied.

*Nemosturmia* [Winthemia] *amoena* Mg.

*Nemorilla floralis* Flin.

*Carcelia bombylans* R. D.

*Rhacodineura pallipes* Flin.

*Monochaeta* [Cyzenis] *albicans* Flin.

*Phryno vetula* Mg.

## CALLIPHORIDAE.

*Metopia campestris* Flin.

*Ptychoneura cylindrica* Flin.

*Macronychia polydon* Mg.

*Helicobosca distinguenda* Vill.

*Blaesoxipha gladiatrix* Panda.

[*laticornis* Mg.]

*Sarcophaga agnata* Rond.

*S. aratrix* Pand.

*S. crassimargo* Pand.

*S. effusca* Schin.

[*obscurata* Rond.]

*S. roselli* Böttch.

*S. scoparia* Pand.

*S. subvicina* Rohd.

*Lucilia ampullacea* Vill.

*Onesia aculeata* Pand.

*Cynomyia mortuorum* L.

Knuth lists many insects of various orders visiting other species of *Euphorbia*—bees, wasps, saw-flies, ants, ichneumonids, bugs, butterflies, beetles (e.g. Cerambycidae, Chrysomelidae, Dermestidae, Elateridae, Mordellidae, Scarabaeidae and Telephoridae). It is quite likely some of them visit *E. amygdaloides*. Mr. R. R. U. Kauffman recorded *Strangalia nigra* L. (Col. Cerambycidae) as a visitor to the flowers of wood spurge, 1948, *Ent. mon. Mag.*, 84: 78.

The niche of an insect cannot be ascertained until we know where it gets its food and drink and meets with competitors, amongst the other details of its life history. These are scientific facts easily obtainable by collectors and need to be recorded.

## Notes and Observations

**THE PAIRING OF STRYMONIDIA PRUNI L.**—On the 18th June 1960 in a local woodland riding, I was watching some black hairstreaks flying along the tops of the bushes bordering the ride, and my interest was taken by their behaviour around some bushes about 10' or 15' high in particular. They seemed to show much interest before passing on. I stood and watched by one such bush and spotted a freshly emerged *S. pruni* looking still limp, hanging from a twig towards the back of the bush. It was not long before a *pruni*, more persistent than the others, fluttered in and copulation took place. I left them so at 4.20 p.m.—J. H. PAYNE, 10 Ranelagh Road, Wellingborough, Northants. 7.i.1961.

**VANESSA ATALANTA L. (THE RED ADMIRAL) IN 1960.**—I saw my first *Vonessa atalanta* L. on 15th May; a female in very good condition. There were many more than normally in June, July and August, and a good many larvae of all sizes were collected in August. These, to my surprise, were heavily parasitized (the parasites were identified as normal to the species). Although imagines did not occur so freely during September, many larvae were again collected during September, October and until mid November. These had survived some nights of white frost, and I noticed some larvae of a completely black form. Some were quite small even in November, but of all larvae collected during September, October and November, not a single one was parasitized. The last imagines seen emerged on nettle beds were on 30th October and 1st November, and the last to emerge indoors was in early December. Even the very small larvae fed up in a room, the cage being placed on the top of a wireless set.—J. H. PAYNE, 10 Ranelagh Road, Wellingborough, Northants. 7.i.1961.

**LEUCANIA ALBIPUNCTA SCHIFF. (THE WHITE POINT).**—A specimen of the above moth appeared in my mercury vapour trap on 30th September 1960. I had its identity confirmed by Dr. Kettlewell and the Baron de Worms at the "South London" exhibition on 29th October 1960. This is a new record for the books of the Bishop's Stortford Natural History Society. The insect is an immigrant and is usually confined to the seaboard counties in the south according to the books in my possession.—CLIFFORD CRAUFURD, Denny, Galloway Road, Bishop's Stortford, Herts. 14.i.1961.

**HAPALIA FULVALIS HUBN. IN DORSET.**—Referring to Mr. Huggins's notes on this moth (*Ent. Rec.*, 70: 162), on 30th July 1955 I was collecting in the vicinity of the lighthouse at Anvil Point, near Swanage, and I caught a specimen of this moth. It is perhaps interesting to note that it was taken on the open downland back from the cliff top and well away from the houses, whereas Mr. Huggins mentions it being taken in gardens where the larvae were apparently feeding on cultivated *Salvia*. Mr. S. Wakely, who kindly confirmed the identification, suggests that in the open, larvae may feed on clary (*Salvia horminoides* (*verbenica*)) which is not uncommon in the Swanage district. This, however, requires confirmation.—L. PRICE, Springdale, Rodborough Avenue, Stroud, Glos. 9.i.1961.

LAMPROPTERYX OTREGIATA METCALFE AND EUPHYIA CUCULATA HUFN. IN GLOUCESTERSHIRE.—On 24th August 1959 while collecting near Cannop Ponds in the Forest of Dene a female *otregiata* was netted. It was beaten from low mixed herbage. This species is not recorded in Lt. Col. Donovan's catalogue, 1942, or in Mr. Austin Richardson's supplements dated 1945 and 1953.

A fresh female *Euphyia cuculata* Hufn. came to mercury vapour light in my garden at Rodborough on 21st June 1960. This species has not previously been recorded either in the Lt. Col. Donovan catalogue or in the two Austin Richardson supplements.—L. PRICE, Springdale, Rodborough Avenue, Stroud, Glos. 9.i.1961.

COLLECTING IN LAPLAND: A CORRECTION.—With regard to my article (*Ent. Rec.*, 72: 203) I find it necessary to make two corrections. My identifications were in the first place made from T. W. Langers' beautifully illustrated *Nordens Dagsommerfugle*. Mr. B. C. S. Warren suggested that my *Boloria pales* were in fact *B. napaea*. This I confirmed on checking with the collection at the British Museum (Natural History). Moreover, my *Oeneis jutta* turned out to be *O. norna*. Langers' illustrations though titled *B. napaea* and *O. jutta* seem to correspond with specimens of *B. napaea* and *O. norna* in the British Museum collection. Therefore, for *pales* in my article read *napaea* and for *jutta* read *norna*.—Major General Sir GEORGE JOHNSON, K.C.V.O., C.B., C.B.E., D.S.O., D.L., Castlesteads, Brampton, Cumberland. 18.xii.1960.

HADENA COMPTA SCHIFF. AND ENNOMOS AUTUMNARIA WERNER. IN CAMBRIDGESHIRE.—You ask in the November "Record" (*Ent. Rec.*, 72: 251) about *H. compta* and *E. autumnaria* with particular reference to Cambridgeshire. For an account of their first appearance in the county I would refer you to *Ent. Rec.*, 69: 125.

*H. compta* comes to my light trap regularly but not commonly. I also found it on Wicken Fen in 1958. I also found one, *E. autumnaria*, last year and two this, and I have a feeling that the Rev. G. A. Ford has taken it at Balsham. I also have two specimens bred in 1947 from larvae which I believe were found at Sawston (I did not take them myself); there being some doubt about these, I have not recorded them.

This has been a very poor year indeed for the butterflies, and moths have been few and far between. One bright spot, however: *Arenostola extrema* Hübn. (*concolor* Guen.) was very common on Woodwalton Fen, and quite a few *Pyrausta perlucidalis* Hübn. as well.

I wonder whether you have any reports about *Pieris brassicae* L. This species has been completely absent from Cambridgeshire and I understand that it is no longer considered to be of much economic importance. Incidentally, I bred five complete albinos this year.—BRIAN O. C. GARDINER, 43 Woodlark Road, Cambridge. 21.xi.1960.

OPISTHOGRAPTIS LUTEOLATA L.—Mr. Desmond Lanktree writes (*Ent. Rec.*, 72: 229) asking information regarding colour forms associated with or independent of environmental factors of *O. luteolata* L. I would refer him to a little book entitled *A Few Nature Notes* by Dr. Wright of Braunton, North Devon. He refers to this subject at some length, stating that the larva does differ in colour according to its

foodplant and that the double-pointed hump varies in size considerably. He gives a coloured plate of the larva. This book gives a list of the lepidoptera, flora and ornithology of Braunton and district. It was published shortly before 1938; unfortunately, I left my copy in England and do not remember the exact particulars, but I think it was reviewed in the *Entomologist* at the time of its publication.—Captain C. Q. PARSONS, John's Row, Westpoint, Co. Mayo, Ireland.

NOMOPHILA NOCTUELLA SCHIFF. IN 1960.—A mild spell at the end of February induced me to put out my moth-trap rather earlier than usual, and to my surprise, when I inspected the contents on the morning of the 29th, I found a fresh specimen of this moth which made me wonder whether this is the earliest date on record for the species. Not unnaturally, I supposed that it presaged a wonderful season for this usually abundant migrant; but though I am not prepared to assert that I saw no more until September, when a few visited my m.v. light in South Devon, they were certainly few and far between. Furthermore, at Yarmouth, Isle of Wight, in early October not a single specimen of *noctuella* was to be seen, though it was in its thousands there at the same period last year. I wonder whether this scarcity conforms with the experience of other collectors?—EDGAR J. HARE, Harrow Place, Pinden, Dartford, Kent. 30.xi.1960.

## Current Literature

PROCEEDINGS AND TRANSACTIONS OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY, 1959.—This interesting volume contains obituary notices of F. T. Grant and R. Eldon Ellison. These are followed by accounts of meetings, including the Annual Exhibition, and two plates illustrate seventeen specially interesting insects shown. The President's address is entitled "The Mechanism of Speciation in Animals" and is a good introduction to the study of genes and chromosomes, and finishes with a good bibliography of books and papers on the subject. Field meetings are reported with the interesting insects seen or taken.

Papers include "The Malayan Gliding Reptiles" by M. W. F. Tweedie with three half tone plates and three text figures; "A Naturalist in the Kingdom of Kerry" by H. C. Huggins with a map of the district dealt with; a report of the insects collected in Madeira by A. E. Gardiner and E. W. Classey and Part IV of "Larvae of the British Lepidoptera not figured by Buckler" by G. Haggett with two plates in colour, executed by the author, and illustrating the larvae of *Laphygma exigua* Hubn., *Cirrhia ocellaris* Borkh., *Leucania favicolor* Barrett, *Arenostola brevilinea* Fenn, and *Leucania l-album* L. In addition, there is a very useful catalogue of the society's library by the Librarian and his assistant, Messrs. T. R. Eagles and F. T. Vallins, the fruit of much useful labour on the part of these gentlemen.—S.N.A.J.

THE CHANGING SCENE, No. 2.—This interesting little magazine deals with the state of natural history in the north west of England and is published by four local societies. Articles include the year's weather, the natural history of Helvellyn, Mammals, Birds, Lepidoptera, Flora and Geology. The whole is written to be of interest to both the advanced naturalist and the beginner, and should be of use to anyone contemplating a visit to the Lake District and surrounding country.—S. N. A. J.



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# EXCHANGES AND WANTS

*For Sale.*—Entomological Cabinets, one 20 Drawers, one 17 Drawers, and one 16 Drawers. Easy payments if required.—R. W. Watson, "Porcorum," Sandy Down, Boldre, near Lymington, Hants.

*For Sale.*—Entomological Cabinets, all sizes, due to change over to unit system. Details on application. Easy payments if required. R. W. Watson, "Porcorum," Sandy Down, Boldre, Near Lymington, Hants.

*For Exchange.*—"Field Lepidopterist", Tutt., 3 Vols. "British Moths", Morris, 4 Vols., 1891. "Tineina", Stainton, 1854. "British Tortrices", Wilkinson, 1859. Also wanted: Storeboxes, 13 × 9 or 14 × 10. Cartwright Timms, 524 Moseley Road, Birmingham, 12.

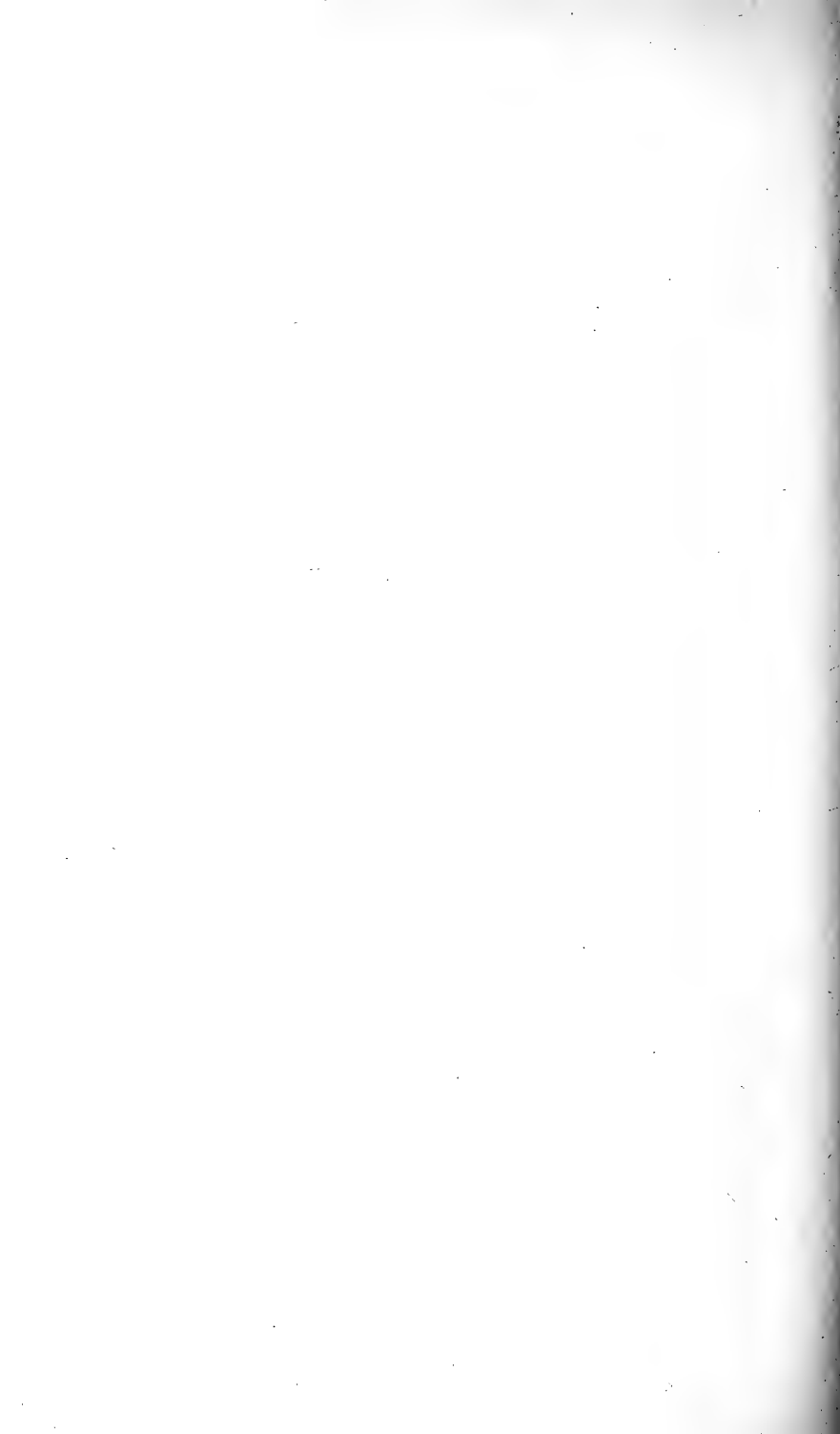
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## Butterfly Hunting in Anatolia

By C. G. A. CLAY

From Ankara it was two day-long bus rides to Trebizond, far to the East on Turkey's Black Sea coast. The first day's journey had been Northwards across the dry Anatolian plateau, with its rolling hills of pastel pink, light amber and yellow, to Samsun, the chief port of the North coast. This is a dull little town, overflowing with United States Air Force personnel and technicians, and after a day's recuperation from the endless jolting and the cramped seats, I pushed on to Trebizond. For ten hours we drove along the coast road, and gradually the countryside changed. Gone were the dry hills around Samsun; instead, we were passing through mile after mile of hazelnut orchards, thick with luxuriant undergrowth. The roadsides were high with weeds, and above us the thickly wooded mountainsides rose steeply, at times almost sheer, from the sea. For this part of Turkey has a unique climate. The winds blowing across the Black Sea bring a heavy rainfall, which the high mountain barrier of the Pontic Taurus restricts to a narrow coastal belt. But while the summers are wet and warm, the winters are wet and mild, for the distant Caucasus provide a shield from the bitter winds blowing out of Central Asia. Thus in the Trebizond area up to 100 inches of rain fall in a normal year, and the annual range of temperature is from 43° to 73° F., while Erzurum, only 120 miles away as the crow flies, but on the landward side of the mountains, suffers the full rigour of a Continental climate. Winter temperatures are commonly below zero F., and the mean for January is only 15°. Similarly, the summers are much hotter, while rainfall is a little above or below 15 inches per year.

It was this peculiarity of climate that had drawn me out from England, in the hope that the area might produce some interesting butterflies. Further, I had been told by the Natural History Museum that no-one had "done" that part of Turkey for many years. In fact, I did not find nearly as much as I had hoped, and indeed expected. Partly this was due to the wet climate, which, of course, is far from ideal for a butterfly collector. Too often the weather was positively English. For days at a time the coast would be under a thick blanket of cloud, which would intermittently break into drizzle. There had been serious floods earlier in the year, and evidence of them was still plentiful. Stretches of the road had been torn away by swollen rivers, so that the bus had to bump along a temporary track through the hazel bushes; stream beds were choked with fallen trees; bridges were ruined. But also the difficulties of getting right up into the mountains proved insuperable, since I was not equipped for camping. My introduction to the Plant Protection Institute at Trebizond, who might have been able to help, proved abortive, since apart from single words of each other's language, the only tongue we shared was Latin. I did not feel up to an entomological conversation in that language! Thus I had to rely on bus transport most of the time, and could rarely get far from the roads.

My first day's collecting was in rough ground on the coast road just out of Trabzon. *Epinephele jurtina*, *Pontia daphidice*, and *Colias*

*croceus* were common enough. In addition, I caught several of the Glanville fritillary, *Melitaea cinxia*, a single specimen of *Ochlodes venata*, and the little black and white skipper *Pyrgus uralensis*. On the following day I took the rickety old bus that went up into the mountains, over the Zigana Pass, and so on to Erzurum. I got out at the little village of Hamsikoy, at about 4,000 ft. up. Here I might have been in the European Alps. All around were lush hay fields, thick with flowers, while above, pine-clad mountains swept upwards to rounded grassy summits. But again the butterflies were rather disappointing. Again there were plenty of Bath Whites and Clouded Yellows, and on the edge of the woods, there were some large fritillaries—*Argynnis paphia* L. and *A. aglaia*—flying. With them were *Pararge maera*; *Polyommatus icarus* (a large form) as the only Lycaenid; and *Pyrgus armoricanus*, a very similar insect to *uralensis*, was the only Skipper. However, *Hippothoe candens* made a very welcome catch. This is a very fine, large, copper, its top side a particularly fiery red, the underside a delicate pale blue.

Some time later, I went higher into the mountains, getting out of the bus at the summit of the Zigana Pass, and spending the night at a little inn up there. I was the only guest, which was just as well, since the sleeping quarters consisted of a single room, with six wooden bedsteads crammed side by side into it. The roof, walls and floor were dried mud, and a smoky old paraffin lantern provided the only light. Downstairs, there were some old tables and chairs, and while I sat there in the evening, to read and write, the proprietor and his friends sat in a corner looking at me over their glasses of raki, while the children gathered in a giggling group round the door—clearly a foreigner was something of a rarity. But here we were at 6,000 feet, and well above the tree line. Grassy downs, rounded and covered with short turf, free of boulders, rose up above the inn on both sides of the road. From the summit of the pass there was a magnificent view. The hills fell steeply away to a great valley. Beyond was range upon range of mountains, the highest gleaming white with snow. But gone were the greens and the trees of the seaward slope; all was brown and yellow—this was the great Anatolian plateau. The grassy slopes provided several species which hitherto I had not met in Turkey. There was *Argynnis lathonia* and *Boloria pales*, a small fritillary which is to be found in the Alps. The form I found here was a much brighter orange, with smaller black spots, and a lighter coloured underside than the Alpine form. Another butterfly flying in large numbers over the closely cropped turf was *Erebia tyndarus*. The type appears to approximate most closely to *Erebia tyndarus iranica*, i.e., to the Persian form, rather than that of Western Anatolia. It has broader red bands, and is rather larger than the specimens I have taken in the Alps.

I was only able to make one attempt to get higher than the bus would take me—up to 8,000 feet—and that was brought to nought by the weather. I begged a lift on a lorry going up to take supplies to the isolated sheep farms, but no sooner had we left Zigana than the mist closed down, and I was never able to see what the higher Partic Taurus could produce. But the highest part of the range, the Kaçkar Massif, rises to nearly 13,000 feet, and so even at 8,000 feet I would not have found the “butterfly ceiling”.



A walk down from Zigana to Hamsikoy provided me with the most successful day's collecting that I had yet had. In the meadows, dense with flowers and great clumps of cow-parsley, along the edges of the pine woods and on the rough slopes recently cleared of timber *Fritillaries*, *Erebias* and *Blues* abounded. *Melitaea didyma* and *M. athalia* were both extremely common, the former showing its usual wide variation in ground colour and density of black markings; the latter a very well marked, large, form. I took a single specimen of *Argynnis euphrosyne*, *A. aglais* and *A. paphia* mixed with their smaller cousins. It was on this day that I saw the first *Limenitis* since I had been in Turkey; it "got away" and what it was I do not know. Of the *Erebias*, *tyndarus* preferred the higher slopes, but *aethiops*, in the well-marked form *melusina*, was flying. *Melusina* is large and well-marked with broad red bands. Even more interesting to come across was *Erebia hewittsoni*, whose head-quarters seem to be in the Caucasus. This *Erebia* has a tri-pupilled eye in a big orange patch on the forewing, and a row of little spots on the underside of the hindwing. I found *Hippothoe candens* again, and (unfortunately very worn) *Maculinea chiron*. With them were two members of the genus *Aricia*; a few of our own Brown Argus (*agestis*), but much more common, *Ariciaalcon*, which has a white streak on the underside of the hindwing.

From Trebizond I took the bus some 80 kms. further along the coastal road to Rize. This is an attractive little port of white-walled houses and minarets, squeezed into a depression in the swelling Pontic range, and surrounded by forest-clad hills. Because it is the centre of the tea-growing area, Rize boasts a botanical garden—of a sort. Here was an incredible, and not too orderly, profusion of vegetation: sub-tropical lilies, palms, orange trees and tea-bushes, alongside bramble, nettles and bind-weed. But bad weather prevented any collecting at Rize: the only species I saw were *Gonepteryx rhamni*, *Polygonnia calbum*, and *Ochlodes venata*. I went further East still, to Hopa, within a dozen miles of the Russian frontier (one can see Batum from the hill above the town) and then inland to Artvin. Here, I was amongst dry, scrub-covered hills, for Artvin lies on the landward side of the mountains. It is wild, remote country, and might have yielded some interesting species; but the clouds were still with us, and I could not afford to wait for fine weather. I found only species common everywhere in Turkey: *Colias croceus*, *Pontia daphidice*, *Liptidea sinapis*, *Polyommatus icarus* and *Papilio podalirius*. There was one exception to this in the copper *Thersammon thersammon*, which I only saw on one other occasion.

It was now mid-July, and time for me to leave the lush vegetation of the coastal slopes of the Pontic Taurus. I took a bus back to Samsun, and thence another, inland to Amasya, up on the Anatolian plateau. Amasya is set on the river Yesil, in a deep gorge. On either side, the cliffs rise up sheer to nearly a thousand feet, and to the West they are crowned by the ruins of a castle, now only the home of storks. The heat of summer had turned the hills brown and dry; the flowers, which a few weeks before must have been a riot of colour, were now parched and brittle and their seed pods rattling in the breeze. But butterflies were still fairly plentiful. My most happy hunting-ground was in a little valley behind the castle. To get there, I had to climb up out of

the town by a steep path, past the little shack of a venerable peasant. Although I spoke only single words of Turkish he would have me stop every time I passed, and sit with him a while, and once he gave me a rose—the only rose—from his garden. On another occasion he showed me proudly some writing he had got in a foreign language. It was a business letter from a German firm—goodness knows how he came by it! He made a brave show of reading it through, but alas, he was holding it upside down. At Amasya not only were the butterflies plentiful, but the skies cloudless. At times it was very hot. I had plenty of work chasing the strong-flying *Satyrus mnizechii*. The male of this insect is a bright orange colour, in the usual pattern of the genus. The female, which was much less common, is completely different, being smaller, with white markings instead of orange, and has a little yellow patch on the forewing. Flying with *mnizechii* were too similar species: *Satyrus anthella* and *Satyrus mamurra*. Another common Satyrid was *Satyrus briseis*, in an unusually large form. Together with the white variety were a few specimens in which the ground colour was a rich ochre. Apparently this form is still unnamed. I never came across an intermediate form, say, cream in colour. *Satyrus statilinus* was to be found as well: it was most numerous in the main street of the town, flying from tree to tree, and settling on the trunks. But normally, of course, the Satyrids settled on the ground, where their variegated undersides at once turned them to stones if one took one's eyes off them, so that they disappeared completely. The easiest way to catch them, I always found, was to approach them very softly and lower the net on to them, very slowly, from directly above, until it was no more than six inches from the insect, and then to bang it down quickly. This method is invariably successful unless I am too noisy in my approach, or bring the net down too soon—given even a foot, a butterfly can escape. There were other butterflies than the Satyrids though: *Pararge hera*, a similar species to *Pararge maera*, which actually inhabited the castle; *Vanessa cardui*, and *Polygonia egera*, to be caught settling on the great clumps of yellow ragwort. As everywhere else in Turkey, *Pontia daplidice* was the commonest butterfly. From the ranks of the Lycaenidae I caught *Aricia agestis* and *Polyommatus icarus* (a small form) and also *Freyeria trochilus*, a diminutive butterfly that flitted around the low thorn bushes. It was very abundant, and often I would find that I had swept one up in my net, quite by mistake, when catching another butterfly. *Lycaena phleas* was the only copper at Amasya, and *Spitalia sertorius* and *Muschampia proto* the only skippers.

Four days was all the time I could afford to spend at Amasya. During the last week of July I was travelling continuously, and unable to do any serious collecting, though on my journey across Anatolia to Mersin, and thence by sea to Antalya, I had opportunities to catch butterflies by roadsides and in gardens. Near Kayseri, amongst the weird cones of Cappadocia, I found *Papilio podalirius* very common, but more interesting was *Satyrus bischoffi*, a fine satyrid with a salmon pink hindwing; unfortunately, I only took a single specimen. A few days later, at a height of 3,000 feet, amongst the pine-woods just above the famous Cilician Gates—the pass over the Anti-Taurus Mountains—I caught *Maculinea ignorata*, a pretty little blue with a scalloped edge to its hindwing. The public gardens of Mersin, down on the Mediter-

anean coast, were quite full of butterflies. *Papilio machaon* and *podalirius* chased each other across the streets, jammed with hansom cabs and taxis. The lawns and flower-beds were haunted by blues—*Lampides boeticus*, *Syntaurucus telecanus*, *Freyeria trochilus* and *Freyeria galea* (less common); *Zizera knysna* and *Polyommatus icarus*.

It was not until 2nd August that I spent another full day collecting. I was now some 230 miles further west, at Antalya, having travelled along the coast in a smart steamer of the Turkish Maritime lines, running from Haifa to Istanbul. Antalya is in ancient Paphlagonia, and the surrounding countryside is littered with the ruins of Greek cities. It would be an excellent place to spend a holiday, for it has a delightful position. The mountains across the bay rise to some 5,000 feet. The most lovely view I saw in Turkey was from the top of the town, with the curious grooved minaret of mellowed brick in the foreground. Below it were the tiled roofs of the houses and the palms rising from amongst them, and across the bay lay the wall of mountains, pearly grey, brown or pink according to the time of day. I combined butterfly collecting with visits to three ruined cities—Perga, where St. Paul preached his first sermon; Aspendos, with its almost perfectly preserved theatre; and Side. Here I collected butterflies in a wilderness of brambles, low bushes and undergrowth, of fallen columns, broken walls and shattered sculptures. I chased *Papilio podalirius* and *machaon* over melon fields, which seemed to be made up of broken brick and tile rather than soil. But although collecting amidst Grecian ruins was very romantic, it was not very rewarding. There were plenty of butterflies but I had caught all of them before in Turkey, except the common Skipper, *Carcharodus alceae*, and the little fritillary *Melitaea trivia*.

And so, after a few days, I started on the penultimate lap of my Turkish journey, North to Bursa, formerly Broussa, capital of the Ottoman Empire in its earlier days. This city of mosques and shrines is built amongst several small hills at the foot of 7,000 feet high Ulu Dag (Mount Olympus of Mysia). Since a ski resort is being developed on the mountain, I was able to get up there by bus, which finally stopped above the tree line, about 1,500 feet below the summit. The slopes were covered with rough grass and heather, but to my disappointment almost entirely devoid of butterfly life. I caught only two species, *Erebia stirijs*, which was common, and the familiar silver-studded blue *Plebejus argus*, which was not. It was in the bright, strongly marked form *Plebejus argus bella*. In the event, a stretch of wasteland and olive orchard at the foot of the mountain proved to be a better hunting ground. Here I found several species I had not yet seen in Turkey: the Holly Blue, *Lycaenopsis argiolus*; two skippers, *Thanaos tages*, in the form *unicolor* (which is descriptive, for the top side is a uniform brown, and not mottled as in the normal form) and *Thanaos marloyi*. I caught a single specimen of a large Pararge new to me, *Pararge roxelana*. Feasting on the myriads of bramble flowers were *Epinephele tithonus* and *E. jurtina*, in company with *Limenitis camilla*. There were numerous other species I had met in the previous weeks, including *Melitaea didyma*, which I had not seen since I left Trebizond: also *Argynnis paphia* and *Leptidea sinapis*.

This was my last day of collecting in Turkey, and the next day I returned to Istanbul. The yield of species I had found rather dis-

appointing. I had expected more, particularly from the Pontic Taurus. But from what I did manage to catch in the meadows and on the hill-sides above Trebizond, in the short intervals of good weather, I should say that an intensive collection, made over the whole summer, would be very rewarding indeed. It would be frustrating work, with days, and even weeks of rain, with the clouds low on the mountains. But there are at least two quite adequate hotels in Trebizond (more if you do not mind roughing it), and they are cheap by Western standards. There are few railways in Turkey, but one can go practically everywhere by bus, which is cheap and quick, if not particularly comfortable. It is only on the unimportant local buses that you are likely to have a sheep as co-passenger! The horrors and dangers of travelling in Turkey which Miss Fountaine had to undergo when she visited Amasya and Bursa to collect, and which she described in the *Entomologist* of 1904, are things of the past. To-day Trabzon can be reached by sea from Istanbul, or by bus from Samsun, which is on the railway; and possibly now by air, too.

## Two New Aberrations of *Apatura iris* Linnaeus

By I. R. P. HESLOP

(i)

The eye-spot towards the tornus of the hindwing (upperside) of the Purple Emperor is, in typical specimens, described by Meyrick (*Revised Handbook*) as a "black ferruginous-ringed sometimes whitish-centred spot towards tornus". I find that the "whitish centre" (often inclining to bluish) is present in a majority of the females, but in only a minority of the males: in a male specimen taken by myself it is particularly well marked and of a beautiful clear blue colour.

It should perhaps be mentioned that in certain trade catalogues the name "parvipunctata" has sometimes been applied to the absence of this "whitish centre", even though this condition is the more frequent one taking the species as a whole. The use of this name here has no scientific sanction whatever, since it appears properly to be applicable to absence of spots in the Holly Blue; and by the laws of nomenclature aberrational names are not inter-changeable between species (despite massive attempts to the contrary).

However, where the ferruginous (orange) surrounding patch is absent I consider the aberration sufficiently significant to name. So far, and after a protracted scrutiny of specimens both in the hand and in numerous collections, I have encountered this aberration only in the male: it is decidedly scarce, with an incidence—as I estimate—of only some 2%. The formal description is as follows:—

**nov. ab. sari Heslop.** Upperside only. The spot towards the tornus of the hindwing lacks both the normal ferruginous (orange) patch surrounding it and also the whitish centre. Type specimen is in my collection, a male taken wild by myself in Wiltshire on 25th July 1960 (aberration being co-incident with ab. *maximus*, separately described). Co-type is in the collection of my son, John Heslop, being a male taken wild by him in Wiltshire on 30th July 1957, when he was nine.

## (ii)

As will be enlarged upon in a further paper, the kinds of underside variation traditionally associated with *iole* and *semi-iole* upper-sides are best considered as quite separate aberrations. Not only so, but I have now personally taken a male specimen which, while full *iole* on the upperside, is on the underside—the subject of the present description—an extreme aberration quite new to the species. Strangely, however, there is some congruency with certain characters of the melanic-confluent range of aberrations of *Argynnis paphia* L. (Silver-washed Fritillary).

In my paper published at page 251 of the December 1960 issue of *The Entomologist* the specimen now being considered (caught on the same day and on the same spot as the *maximinus*) is alluded to as “semi-iole”. The specimen was somewhat rubbed on the upperside, and hence was set underside (which is perfect). It was on the board when that paper was written, and a glance (while absorbed with the other specimen) showed that it had on the underside certain attenuated light bands (of which more below); hence the mistaken citation. Recent examination of the insect, in consultation with colleagues, has shown that the upperside is full *iole*; but that the underside aberration is not only startling, but new and unique. The formal description is as follows:—

**nov. ab. sorbioduni Heslop.** Underside only. There is no trace of the normal ocelli. The white bands of the normal specimen are wholly extinct, that of the hindwing being replaced as described below. The terminal third of both forewing and hindwing is in the main brown-grey, without any ferruginous shading but with a broken very slightly darker sub-marginal band. There is a brown patch at the apex of the forewing. There is a black mark and a brown patch at the tornus of the hindwing. The centre third of both wings is occupied by a dull chestnut band, which loses itself towards the tornus of the hindwing. On the hindwing this chestnut area has, extending along its middle and corresponding generally in position to the broad white band on normal specimens, a narrow broken buff band. The *iris* “tooth-mark” is discernible. A vague impression of this buff band is continued into the forewing in the direction of the apex (and not along the line normally occupied by the white markings of the forewing). The basal third of both wings and a wide area along the dorsum of the hindwing are brownish-grey shaded with ferruginous and for the most part merging into the central chestnut area. There is no white patch in the basal half of the sub-costa of the forewing (though the two normal black marks are present there), nor any white mark save just below the apical brown patch of the forewing. There is black shading on all the wings (the specimen described is slightly asymmetrical in this respect). There is a slight smokiness of the whole, resulting in a blurring of definition of the colour areas and a general dulling effect. There is also a slightly bluish tinge in some of the lighter areas.

The Type, a male, is in my collection. It was taken wild by myself in Wiltshire on 25th July 1960. (The upperside is full *iole* Schiff.).

# The Macrolepidoptera of Inverness-shire: Newtonmore District

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

(See *Ent. Rec.*, **66**: 58, 90, 124; **67**: 39; **68**: 91; **69**: 52; **71**: 115; and  
**72**: 14)

## SUPPLEMENT No. 6

Once more it is a great pleasure to be able to record new species of Macrolepidoptera for my Badenoch List, the definition of the district being contained in my main list in *Ent. Rec.*, 66.

This year, 1960, five new species have occurred, the main quota of four of them being rare migrants. This is noteworthy for two reasons: the Central Highlands of Scotland are not usually well patronised by these visitors, and 1960 does not seem to have been a good migrant year in the South. The fifth species is a locally abundant southern insect which may have penetrated to the North as so many others seem to be doing under the influence of a steadily ameliorating climate.

### SPHINGIDAE

*Acherontia atropos* L. A male specimen of this fine immigrant in good condition was found at rest on a hay-stack near Laggan on 17th July 1960. In my absence in the South, it was taken to Dr. C. B. Williams at Kincaig, who presented it to the Edinburgh Museum. Three more specimens of this species were taken not far outside this area in September, two at Struan in Perthshire and one at Inverness. It is curious to note that in the great "*atropos*" year of 1956 the Badenoch district was not favoured with any observations of this great moth.

*Celerio livornica* Esp. A female of this rare immigrant in fair condition was found at 6 p.m. on the back door step of a farmhouse near Kingussie on 8th August 1960 and brought to me the following morning. The general appearance of this insect is a little different from the usual *livornica* taken in Great Britain, of which I have a considerable number. The silver nervures are very faint, and the marginal band on the front wings very pale. Taken into consideration with the time and nature of capture, which indicates a daytime flight, it is possible that it is of the North American form of *C. lineata* Fab. Unfortunately the thorax is rubbed, so that the distinguishing character of six silver lines cannot be seen.

### ARCTIIDAE

#### ARCTIINAE

*Callimorpha jacobaeae* L. Three wings of a specimen of this locally abundant southern species were found on his m.v. trap by Mr. A. J. Wightman at Aviemore on 12th June 1960, quite clearly a bat casualty. This moth probably belongs to the increasing category of species which are penetrating this Highland district from the surrounding lowlands, though accidental transport by train or car cannot be ruled out.

## AGROTIDAE

## AMPHIPYRINAE

*Heliothis scutosa* Schf. A specimen of this very rare immigrant in fair condition was taken outside his m.v. trap at Aviemore on 6th August 1960 by Mr. B. F. Skinner. This was a very remarkable capture, and is probably a furthest north record for the British Isles, and the first for Scotland.

## GEOMETRIDAE

## LARENTIINAE

*Nycterosea obstipata* Fab. A female specimen of this rare immigrant in good condition entered my trap at Newtonmore on 8th October 1960. This may also be a furthest north record and the first for Scotland. Although she was very lively and survived for several days, the finest sherry and sugar, and the choicest plant of Groundsel failed to induce oviposition, in contrast to my earlier experience in Sussex.

An additional note to the original entry of *Apamea unanimitis* Hb. in my main List (*Ent. Rec.*, 66) will not be out of place here. I have been trying to rediscover this species ever since my settling here in 1951, and at last succeeded this year, 1960. On 5th June I took two specimens in the marshy ground between Kingussie and Kincaig. This is about the normal date for the species in most areas, and I feel that the very late date given to me for the original record may perhaps indicate a possible misidentification, as I had not seen the specimen.

This supplement further increases the total number of Badenoch Macrolepidoptera at the present date, January 1961, to 365 species.

21.i.1961. Neadach, Newtonmore, Inverness-shire.

## Inverness-shire in 1960

By Commander G. W. HARPER, R.N. (Retd.), F.R.E.S.

The early winter months following the gloriously sunny Autumn of 1959 were very mild with slight frosts and little snow until the short-lived blizzard of 19th January. This thawed very rapidly, so that *Phigalia pedaria* Fab. was enabled to make its appearance at the village street lights on 23rd January. Mild and sunny weather continued until mid-February, when our winter arrived properly with heavy snow and sub-zero temperatures, reaching a record low of  $-10^{\circ}$  F. during the night of 17th February. This weather lasted until the end of the month when a rapid thaw set in and I started my m.v. trap on the 6th March.

The late intense cold of February put a severe check on emergences of Lepidoptera, so that apart from *P. pedaria* only some hibernators were on the wing before late March, and immigrant birds were late also. However, on 22nd March, *Brephos parthenias* L. began flying over the birches, followed next day by *Achlyia flavicornis* L. and the usual early Spring species.

April followed its normal course with the season at least ten days later than normal. Even *Brachyonica nubeculosa* Esp. did not appear until the 8th and was very scarce this year, the first in which I have failed to spot one at rest on a Birch trunk! This was the experience of other collectors also. The last fortnight of the month became fine and warm producing big m.v. trap catches which pleased some of our southern visitors; but although one of these recorded *Endromis versicolora* L., a male at m.v. light which quite frequently happens here, on the very early date of 19th April, its main emergence did not take place until well into May. Emergences were, however, catching up towards the normal dates, as evidenced by plenty of *Callophrys rubi* L. and some *Anarta cordigera* Thun. and *Isturgia carbonaria* Cl. flying in the sunshine on 27th April.

May was a pleasant sunny month, but cold frosty nights and east winds kept the numbers of individuals down, although most species by now were appearing on their normal dates, such as *Odontosia carmelita* Esp. on the 4th May, and *Pieris napi* L. and *Anthocaris cardamines* L. on the 7th. On the 20th May an observation of more than usual interest was made simultaneously by myself at Newtonmore and by Mr. P. Le Masurier at Aviemore of male *Pieris brassicae* L. I have bred small numbers of this species every year since 1953 from locally found larvae and pupae, the resulting butterflies being invariably single-brooded emerging in late June or July. I feel, therefore, tolerably certain that these early specimens were immigrants from the climatically more favourable South. It would be interesting to breed Invernessshire *P. brassicae* larvae in the South of England to ascertain whether there is an inherent genetic univoltine tendency in them, as there is in such species as those of the genus *Selenia*; *bilunaria*, *lunaria*, and *tetralunaria*. This butterfly continued to be unusually abundant throughout the whole Summer right to the end of September, but it is not very profitable to guess at the proportion of immigrants! Spring larvae were curiously uneven in their occurrence; most ground feeding ones, in particular Agrotids, were very scarce, while many birches were very severely defoliated, especially by *Erannis aurantiaria* Hb., but most of these undoubtedly found their way into the crops of young birds, for imagines in the Autumn were rather less plentiful than usual. My son, M. W. Harper, succeeded in obtaining larvae of *Triphaena sobrina* Bdv. from small birches at night and successfully bred imagines.

June was a fine warm and sunny month, all the usual early Summer insects being in good heart. A day trip to the Great Glen area showed that insects were thriving there too, *Carterocephalus palaemon* Pall. being abundant in both sexes; an interesting find here was a good colony of *Udea decrepitalis* H.-S., spotted by M. W. Harper. Back in Badenoch, *Argynnis euphrosyne* L. was appearing on the 4th June, rather later than usual. On the 5th June I at last succeeded for the first time in finding *Apamea unanimis* Hb. in the marshes between Kingussie and Kinraig, and on the same date and in the same place, and also at Newtonmore in my m.v. trap specimens of *Spilosoma lubricipeda* L. turned up, indicating an increase in this locally rare moth. On the 12th June Mr. A. J. Wightman added a new species to my local List by his discovery of three wings of *Callimorpha jacobaeae* L. on his m.v. trap at Aviemore which clearly indicated a bat casualty.



This may perhaps have been an accidental introduction by car or train, but I hope it will prove to be the beginning of penetration from the surrounding lowlands. One or two common immigrants reached us during the month, one *Plusia gamma* L. on the 8th, and *Vanessa atalanta* L. on the 15th and 21st. A day and night visit to Findhorn on the Morayshire coast on the 20th was crowned by a new record for that area, and possibly a most northerly record also; this was the discovery of a small colony of *Arenostola elymi* Tr. on the Lyme Grass of the sandhills. This local species appears to be confined to the East Coast of Great Britain.

Early July was remarkable for the much larger number of butterflies on the wing than is usual here; a very delightful change. On the 2nd July my favourite butterfly hillside was alive with them; *Aricia agestis artaxerxes* Fab. and *Polyommatus icarus* Rott. were in clouds, and many *Maniola jurtina* L., *Argynnis selene* Schf., and *A. aglaia* L. were all in sight at the same time! This abundance was very noticeable throughout the whole district. The rest of the month I spent in the South and West of England, in which visit I experienced the most atrocious collecting weather I can remember! In North Devon, for example, gales, torrential rain, fog, and very low temperatures with rare sunny intervals occurred all the time. I have vivid boyhood memories of collecting in this delightful region before the Great War, particularly of the great patches of pink Valerian in the Devon lanes, alive with *Argynnis paphia* L., *Vanessa atalanta* L., and *Nymphalis io* L.; this year not one was seen, even when the sun was shining! However, some compensation was afforded by a few species new to me in night collecting, including *Lygephila cracca* Schf., *Leucania putrescens* Hb., *Eilema caniola* Hb., and *Agrotis trux lunigera* Steph., the latter being of course rather worn. *Lymantria monacha* L. was common, and *Alcis jubata* Thun. came to m.v. light.

On 2nd August I returned to Badenoch, to receive the news that another new species, *Acherontia atropos* L., had been added to my local List; it was a male in good condition and had been found by day resting on a haystack near Laggan. More exciting new records followed; Mr. B. Skinner took a specimen of the very rare immigrant *Heliothis scutosa* Schf. outside his m.v. trap at Aviemore on the 6th August, and on the 9th a female *Celerio livornica* Esp. in fair condition was brought to me. It had been found at 6 p.m. on the back doorstep of a farm near Kingussie and was not there earlier in the day, indicating diurnal flight, a well-known characteristic of the North American race of this moth. It looks slightly different from the many British specimens I have, but unfortunately the thorax is rubbed so that the extra distinguishing silver lines cannot be checked. A further scarce immigrant entered my m.v. trap in October, *Nycterosia obstipata* Fab., a female. This number of scarce immigrants is very remarkable here and contrasts with the small number of similar records elsewhere. Three more *A. atropos* arrived no great distance away later in September, two recorded by Dr. de Worms at Struan and one at Inverness. Meanwhile the weather had deteriorated here also, being cold, cloudy and showery, but nothing like as wet as in the South; in fact our annual rainfall eventually turned out to be no less than ten inches less than normal! August ended on a slightly warmer note, the usual

species being present in average numbers. Further evidence of immigrants was provided by five *Eurois occulta* L. of the pale grey continental form on the 17th and several succeeding days.

September continued the same weather pattern, rather cold, dull and showery, with the usual Autumn species generally below the average numbers. Some common immigrants appeared, especially as previously noted, *P. brassicae*, but very few *V. atalanta* this year and a fair number of *Agrotis ipsilon* Hufn. probably bred locally from an earlier immigrant parent. *Plusia gamma* L. fresh and large, appeared similarly in small numbers. The last was seen flying rather weakly by day on the sea coast at Nairn as late as the 4th November!

On the 7th October I was very pleased to take in my m.v. trap the second specimen of a very remarkable aberration of *Allophyas oxyacanthae* L., the first of which I took in 1958. As it is therefore shown to be a recurring form at Newtonmore, and Mr. Goodson of the B.M. (Nat. Hist.) at Tring kindly tells me it appears to be an ab. nov., I have described and named it elsewhere ab. *occulta*, from its main character, the complete obliteration of the silver crescent by a black bar, and a solid black base to the forewings. It will be of great interest if other observers should record this new form from other localities; it seems improbable that it is confined to Newtonmore. On the 8th October a female *N. obstipata*, referred to under August, occurred in my trap. This may also be a most northerly record for the British Isles. The first snow of the Winter fell on the High Tops on the 10th October, but frost did not occur until mid-November, very late this year, and on the 20th November an emergence of *Operophtera fagata* Scharf. brought the season to an end. It was a year of considerable entomological interest, notably in the large number of scarce immigrants, and a splendid number of butterflies in this part of Scotland, where we were also duly thankful to escape the atrocious worst of the weather experienced by our friends in the South.

Neadach, Newtonmore, Inverness-shire. 24.i.1961.

## Notes on Orthoptera in Southern England in 1960

By J. F. BURTON, B.Sc.

(B.B.C. Natural History Unit, Broadcasting House, Bristol)

My opportunities for collecting Orthoptera were rather limited in 1960 and I counted myself fortunate, therefore, that the summer was such an unfavourable one for observing these insects.

At the beginning of May I took up a new appointment in Bristol with the result that I spent only occasional week-ends at my home in East Grinstead, Sussex. Here, most of my observations were concentrated around the immediate vicinity of the house. It was in this locality that I found my first nymphs of the year—two species, *Chorthippus parallelus* (Zett.) and *Omocestus viridulus* (L.) on 4th June.

Shortly afterwards I travelled to Poland to attend the 7th General Assembly of the International Union for the Conservation of Nature. The weather in Poland proved to be as wet as in Britain and the only orthopteron I encountered on the field trips was *Tettigonia viridissima*

L.; by the Dunajec river in the Pieniny National Park, near the Slovakian frontier, on 23rd June.

Back in England on 27th June I found *Ch. parallelus* fairly common on grassy banks in the Cheddar Gorge, Somerset. Some individuals were quite well-grown, but the majority were still small. At Bourton Combe, near the North Somerset village of Flax Bourton, I found many fully mature *parallelus*, *Chorthippus brunneus* (Thunb.), and *Myrmeleotettix maculatus* (Thunb.) on 2nd July; on a limestone outcrop amid the wooded slopes. The *maculatus* males were stridulating freely in the sunshine. In the low-lying meadows around Flax Bourton, *parallelus* was common everywhere, as I later found it to be throughout North Somerset.

When I next visited East Grinstead, on 9th July, *Omocestus viridulus* adults proved to be numerous in my garden and on neighbouring grassy banks, etc. *Ch. brunneus* and *Ch. parallelus* were also plentiful in this district and on 31st July I caught an adult female *Ch. albomarginatus* (Geer) in the garden: probably the offspring of individuals I released last summer.

During the afternoon of 31st July, I visited Cuckmere Haven, East Sussex, and collected in a grassy area divided from the sea by a shingle ridge. Here *Ch. albomarginatus*, *Ch. brunneus* and *Ch. parallelus* were very common. The first mentioned was particularly numerous in the long grass verging a stagnant dyke, but overlapped in distribution with *parallelus*. On the other hand, *brunneus* overlapped with *parallelus*, but was mainly restricted to drier places, such as the patches of short grass in the shingle areas.

On the neighbouring chalk down, I encountered many more *parallelus* and, in rough vegetation on the lower slopes, a small colony of *Metrioptera brachyptera* (L.). The latter were a brighter green than those I have seen in the New Forest bogs or elsewhere. Just before I left this spot I caught a fine female *T. viridissima*.

On 21st August, Mr. Jeffery Boswall and I spent the day in the western Mendips, near Weston-super-Mare, Somerset. At Crook Peak, *Chorthippus brunneus* and *Ch. parallelus* were both common, the latter especially on the higher slopes. Most of the *brunneus* I examined were of a lovely, variegated grey form which harmonized beautifully with the limestone outcrops. *Myrmeleotettix maculatus* was also numerous, most of the males being dark green in general colouring and the females a combination of black, grey and white. In bramble clumps and long grass on the lower slopes I heard *Pholidoptera griseoptera* (Geer) males stridulating and captured a large female. This bush-cricket is widespread and often abundant around Bristol: localities where I have noticed it this year include Clifton Gorge and Downs, Portishead, Pill, Flax Bourton and the western Mendips. I am always struck by its superficial resemblance to a large dark-brown spider, even in so far as its gait is concerned. Possibly the similarity affords it some protection from would-be predators.

On Bleadon Hill, two miles west of Crook Peak, I found several *Tettigonia viridissima* on 21st August stridulating from the middle of dense bramble thickets lining the boundary walls of a cornfield. Here too, large colonies of *P. griseoptera* were present along the roadside verges. *Chorthippus brunneus* and *Ch. parallelus* were everywhere common.

In the marshes bordering the Brean-Lympsham road, *Ch. albomarginatus* was found to be widespread and numerous in rough fields, especially along the margins of reedy dykes and ditches. In such habitats *Ch. parallelus* was invariably to be seen as well.

At East Grinstead on 15th September I was handed a live male *Meconema thalassinum* (Geer) by a neighbour, who reported that it came to light the previous evening.

The increasingly wet weather experienced during the autumn caused me to cease field trips during October and concentrate on indoor work, hoping meanwhile for a better season in 1961.

15.ii.1961.

## Ptychopteridae (Diptera : Nematocera) at Robertsbridge, E. Sussex

By P. ROPER

The four species of *Ptychoptera* considered here were all taken on the farm here at Robertsbridge during 1960 and fall into two well defined groups. First, those that were to be found at or near the margins of stagnant ponds, and secondly, those that were found in the vicinity of a small woodland stream. Members of the first category consisted almost entirely of *P. contaminata* (L.) and this was a common insect in its preferred habitat from about the beginning of June and with the exception of July; when a second brood was probably in development; it continued to be noted until mid-September. Specimens taken in June were considerably larger than those of August and September, presumably on account of their larvae having overwintered. The mature insects seem to delight in areas of dappled shade usually amongst the marginal vegetation of the ponds. They have the habit of coming to rest on the upper surfaces of leaves, such plants as stinging nettle, bramble and woody nightshade being most convenient for this and they are among the easier diptera to observe and follow.

The second species of this first category was a shining black female with clear wings and could be either *P. scutellaris* (Mg.) or *P. minuta* (Tonnoir.). Unfortunately, only the males are separable and its identity must remain in doubt although it is more probably *P. scutellaris*. It was taken while at rest on a willow leaf beside a small pond on the 8th September.

The second group—those species taken near a small woodland stream—consisted of *P. lacustris* (Mg.) and *P. longicauda* (Tonnoir.). Both these species, but more especially the latter, are far less known than the others and this is possibly because their habitat requirements are less easily met. The stream through the wood starts from a spring and in all flows about 200 yards before joining a deep sluggish canal. All the *Ptychoptera* spp. were taken well away from the canal and, as there is no other water, an association between the stream and the early stages of the insects is indicated.

Apart from one male *P. lacustris* taken in the wood on 1st August, the entire batch of specimens was collected on the 21st and 22nd of June. On the 21st I took two males and, finding them to be *P. lacustris* and *P. longicauda* respectively, I went to the wood on the following day and succeeded in obtaining two more male *lacustris*, four

male *longicauda* and five females which again are apparently inseparable. I kept some of the females alive with males of either species in an attempt to get them in cop. and possibly breed from them, but the attempt failed. The habits of the insects in the field resemble those of *P. contaminata* and I observed one male walking about on the surface of a bramble leaf with frequent stops as though to eat something, however on further examination the leaf appeared quite clean and dry. It occurred to me at the time that there was a certain similarity in shape and colour as well as in flight and gait to some of the ichneumons and it would be of interest to know if this is of any protective value. (Provided it is a valid comparison in the eyes of any possible enemy.)

Out of our seven British species of *Ptychoptera*, four were found in a very small area of country, which shows that more collecting would undoubtedly increase our knowledge of their range and habits. Not the least interesting fact has been the apparent absence of *P. albimana* (Fab.). This is described as common and widely distributed yet I have never found it here, although I have heard of it from fairly similar localities in other parts of the country.

I am indebted to Dr. P. Freeman of the British Museum (Nat. Hist.) who has kindly confirmed the identities of some of the above species.

Little Slides, Robertsbridge, Sussex. 19.1.61.

## Obituary

**Leonard Talman Ford** was born on 24th October 1881 and was educated at Dulwich College, passing on to Merton College, Oxford, where he obtained an honours degree in chemistry. He then read law and was called to the bar in 1906, practising at his father's chambers in Lincoln's Inn before joining the Civil Service. He was appointed one of the Official Trustees of Charitable Funds in November 1939, and when he retired, he was Assistant Charity Commissioner.

His interest in lepidoptera as a whole brought him in contact with many collectors and his genius for the "micros" made his collection an example in completeness resulting from indefatigable work, and also an example in perfect setting; even his "Neps" having antennae and forelegs extended in the orthodox manner. There are few microlepidoptera collections in the country that do not contain an appreciable number of his specimens. An example of tidiness, he did not, as most of us do, clutter himself up with large numbers of duplicates, but passed on "good things" to his friends as soon as his series was completed to his satisfaction, without waiting for them to fall into decay before parting with them.

There has been no comparable micro collection since that of Eustace Bankes, and we must hope that the means may be found for it to form the basis of a national microlepidoptera collection which could be built up with other famous collections on the lines of the Rothschild-Cockayne-Kettlewell macro collection. This would satisfy a real want and would provide work for students for years to come.

A very large proportion of his specimens were bred, and his advice to would-be micro collectors was that they leave their nets at home for their first five years of collecting. He was a most successful breeder,

finding ingenious techniques for difficult species, and he always had a large number of cultures on hand in perfect order.

It was always his way to decide on the species to be found before setting out, and on a surprising number of expeditions he brought his quarry home in quantity. He was a most knowing and persevering searcher and could fill his boxes while others would be taking ones and twos. In company with others he set out to see whether *Nephopteryx obductella* Zell. was correctly reported by Meyrick as "probably a mistaken record", and came back with a very reasonable bag of larvae from the marjoram on Kentish chalk hills, which went to form his series, and to exemplify the species in the collections of many of his friends. The species has since been shown to be very well established in its somewhat limited terrain.

He described *Coleophora erigerella*, a species new to science, which he discovered feeding obscurely almost entirely hidden in the downy seed-heads of *Erigeron acre* in the Gravesend district, later finding it on Dartford Heath, and it is now known locally practically all along the North Downs as far as the Mickleham region. Another of his new species is *Nepticula (Etainia) marionella*, named after his wife, which he found on tree trunks in the Stanmore Common area. Unfortunately this is one of the few species taken as the imago, and the early stages are not known, but he thought it to be associated with the aspen. There are many bred series in his collection of species whose status is under investigation and which would be invaluable in helping with final determination.

Mr. Ford was possessed of a most likeable nature, being able to assert his views without being overbearing or dogmatic, and he was always willing to consider the views of another, however young or inexperienced, without any thought of patronage. His manifest pleasure on being put on to an insect he desired was good to behold, and he would always disclose his localities to his friends with the sole proviso that they in turn did not disclose them without first consulting him, and this confidence was never misplaced. Wherever he went he gave excellent advice, and simply oozed collecting and breeding hints, unfortunately usually at times when one had not a pencil and notebook handy to record them before he was talking of some other interesting matter. Had it been possible to make and collate such notes, they would have made an invaluable addition to our literature. He wrote the *Guide to the smaller British Lepidoptera*, giving dates for the various stages, and foodplant where known; descriptions of his new species, a paper on breeding the Elachistidae, and another on the British Psychidae, but regrettably little else.

Last year Mr. Ford suffered a slight stroke from which he seemed to recover, but on 9th January of this year, he died. His last public appearance was at the "South London" society's exhibition, and was in great demand amongst his many friends to verify determinations of obscure micros, to determine others, and answer queries. He was president of The South London Entomological and Natural History Society in 1947.

He leaves a widow, two sons and a daughter, whose sense of loss we can well appreciate, and to whom we extend our very sincere sympathy. We are left to regret the passing, albeit at a good age, of one of the greatest microlepidopterists of this century—S. N. A. J

## Notes and Observations

**MALACOSOMA CASTRENSIS L. IN SUFFOLK.**—I was interested to read Mr. F. H. Lyon's note in your recent issue (72: 246) concerning the occurrence of *Malacosoma castrensis* L. on Havergate Island, East Suffolk, as I found large numbers of small larvae of this species on the saltings during a stay on the island from 22nd to 31st May 1953. This was, of course, the year of the great floods which inundated the East Coast at the end of January. Havergate Island was then completely submerged.—J. F. BURTON, B.B.C. Natural History Unit, Broadcasting House, Bristol 8. 6.ii.1961.

**A REMARKABLE MID-FEBRUARY.**—For the first time this year I ran my mercury vapour lamp in my garden on the night of 10th-11th February. *Conistra vaccinii* L., *Erannis leucophaearia* Schiff., *Theria rupicaprararia* Schiff., *E. marginaria* Fab., *Phigalia pedaria* Fab., *Alsophila aescularia* Fab., and *Tortricodes tortricella* Hübner had already been seen at lighted windows, so it was no surprise when these all turned up in the trap. Nor was *Apocheima hispidaria* Schiff. unexpected, but *Orthosia gothica* L., *O. cruda* Schiff., and *O. stabili* Schiff. were astonishing, as were *Achlya flavicornis* L. and *Biston strataria* Hufner the following night. On the night of 12th-13th there were, in addition, *O. incerta* Hufner, *O. munda* Schiff., *Earophila badiata* Schiff. and *Eupsilia transversa* Hufner, and since then I have seen *Phlogophora meticulosa* L. and *Xylocampa areola* Esp. as well as *Peronea cristana* Fab. Except for *meticulosa* and *areola*, which were singletons, all species have appeared in some numbers, about one dozen *strataria* being seen on the best night, and rather fewer of the other species. Truly astonishing for mid-February.—R. M. MERE, Mill House, Chiddingfold, Surrey. 16.ii.61.

## Current Literature

**PRACTICAL HEREDITY WITH DROSOPHILA.** By G. Haskell. Oliver & Boyd, Edinburgh and London. 1961. 10s. 6s.—A slim, well-printed and illustrated handy pocket-sized book "intended as a guide to the manipulation of the fruit-fly (*Drosophila melanogaster* Mg.) in schools and colleges where class work in elementary practical genetics is provided". The life history and morphology of the fruit-fly and practical suggestions for obtaining, rearing and running experimental genetical studies are helpfully described. Many exercises are suggested as practical work to support the description of the various concepts of geneticists. The style is concise, the glossary and bibliography brief. A practical book for the student but nevertheless with much useful information and technical hints for the amateur dipterist who is biologically minded.—L. P.

**KEYS TO AND DESCRIPTIONS OF THE THIRD INSTAR LARVAE OF SOME SPECIES OF SYRPHIDAE (DIPTERA) OCCURRING IN BRITAIN.** By T. J. Dixon. Trans. Roy. Ent. Soc. London, Vol. 112, Part 13. 1960. 15s., from The Society, at 41 Queen's Gate, S.W.7.—The author, now at Zool.

Dept., University of Glasgow, has produced a model paper dealing with the larvae of 56 of the 234 species of Syrphidae of Britain. These 56 are described, 15 for the first time, and a key to them is provided. 34 species are illustrated in the 8 figures which are grouped to afford comparison. The paper concludes with a bibliography of 65 items. It is hoped that the comment in the discussion, "further study of both Syrphid eggs and larvae may elucidate affinities within groups and provide a basis for assessing the validity of genera"—made in a consideration of E. R. Goffe's subdivisions—is a promise of further publications by the author. Many abundant species, e.g. *Eristalis pertinax* Scop. and *E. arbustorum* L., are not included in the key. A chance for amateurs to assist the trained scientist.—L. P.

JOURNAL OF THE LEPIDOPTERISTS' SOCIETY, 14, No. 1.—This volume opens with the President's address delivered by Dr. Eugene Monroe dealing with research by professionals and amateurs which should be of considerable help and interest. Shigeru Albert Ae writes on hybrids of *Papilio xuthus* L. and the *P. polyxenes-machaon* group, with a plate of adults and one of larvae, both in half tone. J. Benjamin Ziegler writes on a redefinition of the genera of North American hairstreaks, and C. F. dos Passos writes on Nearctic Rhopalocera from a taxonomic angle, dealing with the Megathymidae and Hesperiiidae, whose chromosomes are the subject of a paper by Kodo Maeki and Charles L. Remington. Some notes on *Agathymus* from Mexico by H. A. Freeman includes the description of a new species, *A. fieldi*, with a plate showing upper and under sides of the male and female with anatomic photographs of genitalia and the anal end of the pupa. H. E. Hammond contributes an illustrated article on the preservation of larval skins. The catalogue of recent literature is continued.—S. N. A. J.

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*Wanted.*—Records of *Lathridius* spp. (Coleoptera Lathridiidae) especially *L. bifasciatus* Reitter, with locality, date, and if possible details of habitat. E. Lewis, 8 Parry Road, London, S.E.25.

*Wanted.*—Seitz, A. Macrolepidoptera of the World, Vol. I. Barrett, C. G. British Lepidoptera, Vols. X and XI of large paper edition with coloured plates. All other recent literature on European Butterflies. Dr. Neville Birkett, 3 Thorny Hills, Kendal, Westmorland.

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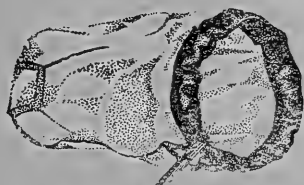
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# *Lysandra coridon* Poda: The Adverse Influence of a Bi-voltine Tendency

By Major A. E. COLLIER

In all colonies of *Lysandra coridon* Poda the year 1959 was climatically an excellent one for pairing and egg laying, the ensuing winter was very normal, and the spring of 1960 left nothing to be desired in the way of favourable conditions for the young larvae.

It seems, therefore, desirable to look for reasons, others than those associated with heavy and continuous grazing, which will account for the sudden great drop in numbers of imagines in most colonies in 1960.

In 1954 I noticed for the first time that a small percentage of eggs laid in July and early August hatched out in the next few months, and that in a mild winter the larvae could be seen feeding well into December, some even reaching their second instar. Attempts to bring these larvae through to the spring, in natural conditions, were not conspicuously successful, though on occasion a few survived and pupated well in advance of the spring hatchings, and in December 1958 a single imago was obtained without artificial protection except in the pupal stage. The premature hatchings accounted generally for 10% to 15% of the eggs laid, and it was noticed that after a biggish autumn hatch some of the remaining eggs would fail to hatch in the spring. In many cases the young larvae managed to eat their way through the shell but, lacking vitality, failed to emerge, and died *in situ*.

In 1959 the great heat in August, September and October had a disastrous effect on most of my batches of eggs, although these were kept on an exposed balcony, shaded from direct sun and open to wind and rain. When rain was infrequent the eggs were kept reasonably moist by occasional spraying.

In spite of this it was obvious in October that eggs were hatching on an unusually large scale, and a more thorough inspection in November revealed that in some broods more than 50% of the eggs had done so. A few larvae were seen, but most had disappeared from the unprotected, and in some cases dead, foodplants.

As a useful number of eggs remained I was not unduly concerned until the spring when, to my consternation, the majority of the surviving eggs in the earlier laid broods failed to hatch. The same thing happened to a fellow collector, Mr. Stockley, who was breeding *coridon* on a very big scale.

In 1958 he captured a male *alba radiata* and mated it successfully with a type female taken from an F1 *radiata* brood. From the 263 eggs laid he obtained 198 imagines in 1959.

From this family he obtained 43 pairings, and eggs, amounting to over 5,000, were laid between 2nd July and 10th August 1959.

The eggs were shared with Mr. Saunders, but not a single egg hatched in the spring of 1960, and it was found that a good 30% or more had hatched in the previous autumn.

Mr. Stockley also obtained pairings between males of the above-mentioned F1 *radiata* brood and type females, unrelated. A substantial number of the eggs were laid early in July, about 10% to 15%

hatched in the autumn, and the remainder hatched in March 1960. Mr. Stockley is inclined to think that the failure in the case of the F.2 broods was due to inbred weakness, but the large autumn hatch must have been due to the exceptional high temperatures, which will also have adversely affected the remaining eggs.

The following table gives the results obtained from my six broods.

Date of laying 1959	Approx. No. of eggs	Approx. %age hatched		Number of imagines
		Autumn	Spring	
10/7 to 25/7	110	50	10	5
13/7 to 23/7	400	50	Nil	Nil
13/7 to 23/7	140	55	5	3
25/7 to 2/8	50	40	Nil	Nil
14/8 to 20/8	40	15	80	23
17/8 to 22/8	110	10	90	70

Of the above only the fourth was a F.2 brood. In all other cases the parents were not more closely related than cousins.

The results seem to indicate that the later laid broods had a greater chance of survival than those laid earlier.

An F.2 batch of eggs from the last brood were laid late in July 1960 and at the end of October it was found that about 12% of the eggs had hatched, and the remainder began to hatch in mid-February 1961. In a large batch of eggs laid by wild females towards the end of August 1960, not a single egg hatched in the autumn, and the young larvae began to emerge also in the middle of February.

The conclusion I draw is that *L. coridon* has a tendency towards bi-voltinism and that the young larvae are substantially unable to survive our winters.

In a late summer of exceptional heat, such as 1959, a far higher percentage of eggs are prematurely hatched and a great number of the larvae in the remaining eggs reach a stage where they do not readily survive hibernation.

The result is bound to be a cataclysmic fall in the population in most colonies.

My own experiences in 1960 were confined to Winspit, where the biggest count at the end of July was 26; the valley immediately to the east, where about 70 were seen; the Light House at Swanage about 120, Ballard Down about 50, Dorking a few dozen, and Shoreham about 100. These numbers were only a small fraction of those seen in 1959 and in earlier years.

Reports from other colonies suggested similar declines in numbers, and the only locality where numbers were said to be as usual is normally a late down where the vegetation is very luxurious and where the climate at the base of the food plant would be more equable than in most other downs.

It might be suggested that this autumn hatching only occurs among eggs laid in captivity, but I have twice found evidence of fresh feeding in October on the leaves of *Hippocrepis comosa* L. when searching for plants to pot up for broods of *Lysandra bellargus* Rott.

In both cases *bellargus* had never been recorded in the vicinity, and in one case in 1947 in Northamptonshire the eating was very extensive



and in the following year the *coridon* population was drastically reduced. It will be remembered that the summer of 1947 was exceptionally hot and my impression is that many downs, including Shoreham in Sussex, have never recovered fully from the losses caused in that year by premature hatching.

There are other species which occasionally produce partial second broods, the most notable in my experience being *Limenitis camilla* L., also in 1947, when a substantial second brood occurred in the woods round Oundle. In subsequent years *camilla* became very much rarer, and has, I believe, never since achieved the numbers seen in 1947 and earlier years.

*Apatura iris* L. is another butterfly which occasionally produces second broods in captivity, without artificial temperatures except in the pupal stage. There were several cases of this in 1959, and it is reasonable to suppose that in nature many larvae fed on too late, and may even have pupated, but could certainly not have emerged, mated and laid eggs. Such a loss of stock could well explain the alarming drop in numbers in 1960, amounting to nearly 90%, in the many favoured localities around Cranleigh.

If my theory has any basis in fact then the unsympathetic conditions of 1960 should go a long way towards restoring the position of *coridon* to what it was before that memorable summer of 1959.

## Aspects of Variation in *Apatura iris* L., with the Description of One New Aberration

by I. R. P. HESLOP and R. E. STOCKLEY

### PART I. GENERAL CONSIDERATIONS

#### (a) *Introductory Note.*

This Paper is intended primarily to give some indication of the potential field for investigation, rather than to conduct such: a few leads, however, are followed up. The Purple Emperor is usually regarded as such a prize that the average collector considers himself fortunate to secure even a single specimen; and in consequence the extent of individual aberration passes unnoticed—apart from the much desired and fabulous classic varieties (to which further attention is given below). The result is that the insect has a somewhat undeserved reputation for lack of variability. Actually it is, number for number, probably as variable as *Lysandra coridon* Poda (Chalk-hill Blue), though probably not so much as *Aglaia urticae* L. (Small Tortoiseshell).

We are dealing with English variation only. Quite apart from the variation, or potential variation, considered in this paper it should be made clear that the Tring Museum has several British named aberrations—mostly according to Cabeau. We thank the authorities of this Museum for the facilities kindly given to R. E. S.

The description of a new male aberration, *maximinus* Heslop, has already been published (*Entomologist*, 93: 251); and the de-

scriptions of two other aberrations (Heslop) have now been published in the *Entomologist's Record*, **73**: 58-59. In connection with *maximinus* it may be observed that the gene of size must be inheritable and breedable—for example there is the Reverend Gilbert Raynor's large *A. grossulariata* (Common Magpie) strain—just the same as any other gene.

To appreciate the potentialities of variation, large numbers must be viewed. For *iris*, this obviously is possible only under quite exceptional circumstances; or if numerous collections are studied by the investigator. The variation noted may be considered in groups.

(b) *Increase or decrease of orange colour.*

An infusion of orange coloration on the upper side of either sex is sometimes so marked as to suggest comparison with ab. *clytie* Schiff. of *Apatura ilia* Schiff., though the extent of the variation is not so extreme. The most advanced wild-caught specimens that we know in this category are a male taken by I. R. P. H. in Somerset in 1952 and a male taken in Wilts. in 1956 by Jane Heslop. Both these specimens were somewhat below normal in size.

A similar trend of variation has occasionally been noticed in bred specimens. Pending the potential occurrence of a more extreme example we are not at present attaching any name to this range of variation (which does not appear to be identical with ab. *thaumantias* Cabeau—see Seitz Supp't p. 191). There is definite evidence that this kind of variation may result from unusual exposure of the pupa to sunlight: an instance in the experience of Mr J. M. K. Saunders may be mentioned.

In the reverse direction, the only variation that can apparently be pinpointed is with regard to the orange patch surrounding the eye-spot towards the tornus of the hindwing. Extinction of this orange patch has been described in the *Entomologist's Record*, **73**: 58) under ab. *sari* Heslop.

(c) *Intersex and mosaic variations. Homoeosis. Scale deformity.*

More research is required under this heterogeneous heading.

A male wholly lacking the purple of the upperside has been noted by R.E.S., but we have been unable to locate it for the purposes of the present paper. This specimen was taken in the New Forest. This aberration corresponds to ab. *obsoleta* Tutt of *Thecla quercus* L.

There occurs rarely with the type in Wiltshire, and probably elsewhere, an aberration of the male in which the normal deep purple-blue of the upperside is replaced by a leaden-blue of paler hue. The scales form a mat which reflects light, as well as refracting it. Distinct and perfect specimens have been taken by I. R. P. H. and by Jane Heslop. The magnificent example by the latter was actually her first specimen of this species, taken (at rest on a board leaning against a shed) by her unaided in Wilts. in 1955 when she was aged only five years and four months. This prize appears to approximate to ab. *romaniszyini* Schille.

In antithesis, in ab. *hindenburgi* Mecke (see below) the purple shimmer is said to be darker than normal in tint.

A female specimen was bred by Mr. Gumbleton, from a Sussex larva, in which there was a patch of upperside coloration on the hindwing underside. It was shown at the South London Exhibition about 1948 or 1949; but its present whereabouts are unknown to us. It is not appropriate to apply an aberrational designation to this condition. It is one of homoeosis, which has been noted in many species; but not so far, we think, in *A. iris*.

On 5th July 1959 Mr. E. L. Bolton took in Surrey a male specimen in which there was a chocolate peppering of the grey markings of the underside. This condition—which requires further investigation—is probably due, not to additional marking, but to scale deficiency; see also under (e).

(d) *Extension and mergence of markings.*

In a certain Sussex locality females have been taken (e.g. in 1955), and noted by R. E. S., which are rather above the average size and in which the normal narrow sub-marginal band along the termen of the hindwing is much widened. One or two similar specimens were noted by I. R. P. H. in Wiltshire in the same year. Further specimens, possibly indicating some climax, are awaited before a formal description is attempted.

At the South London Society's Exhibition in 1943, Mr. B. W. Adkin showed a bred female "with extra markings on hindwings". A female specimen is referred to on page 43 of Vol. 77 of *The Entomologist* as having rayed hindwings. The specimen figured (22) on Plate 29 of Frohawk's *British Butterflies* gives a slight indication of the same feature. See also the allusion under (f) to the 1906 specimen from Northants.

(e) *General variation of the underside.*

This represents a field which we have not hitherto been able to investigate fully, with the exception of the special forms of aberration detailed in (d) and (g). We have not been able to trace the underside specimen (sex not stated) mentioned in *The Entomologist*, 75: 155; if "obsolete" means (as it does with some other species) being without the ocelli, this must indeed be a spectacular insect.

Scarcely any two specimens are quite alike on the underside; and a name for any one of a series of infinite gradations seems invidious. There is an extraordinary range in the depth of the ground-colour, from very pale to very dark. In some specimens, both male and female, the white of the underside is suffused with a delicate burnt-orange tint.

In *ab. obscura* Sälzl, which we believe has occurred in England, the underside areas which normally are chestnut are darkened by black dusting so that they become blackish brown. If Mr. Bolton's specimen mentioned under (c) does not belong to that category, it is probably referable here. *Ab. obscura* also has very dark chocolate tips to the underside forewings.

Incidentally, we deprecate the habit of setting only poor specimens as undersides. This practice tends to vitiate the appreciation of the extreme beauty of the underside and of its range of variation. For our part, we set as undersides only specimens which are quite perfect

on that surface and including some of our largest and best generally.

But many is the specimen, both caught and bred, which we have not killed and set at all; but have released after examination.

(f) *Obsolescence of white markings of the upperside.*

This type of variation, both in the Purple Emperor and the White Admiral (*Limenitis camilla* L.), is often colloquially alluded to as "throwing black".

It is to this group that the classical aberration *iole* belongs. This superb range of variation has deservedly caught the imagination: but, unfortunately, to the neglect of other ranges.

At one time specimens showing any marked diminution of white on the upperside were all referred to as *iole* Schiff. It is only in the last forty years or so that the practice has grown up of alluding to just the most extreme examples as *iole* and to all the intermediate ones as "*semi-iole*". The type of *semi-iole*, as an upperside, appears to have been fixed for both male and female by Frohawk in 1938 (*Varieties of British Butterflies*, Plate 25); but Cabeau has described much the same thing as *iolata*.

We are advised that ab. *iole* Schiff. has been interpreted as applying to total absence of white markings, both on the upperside and underside. Those specimens having only one to four white spots on the forewing, and no other white markings, are in Museum practice treated as ab. *lugenda* Cabeau. And ab. *iolata* (*semi-iole*) covers all specimens with substantial reduction of the white band.

By this criterion, *iole* is indeed an excessive rarity. There is one such specimen in the Tring Museum, set underside.

Here we must observe that the relative figure in South (1906), male, appears to be referable to *semi-iole*, as so understood, not *iole*. The figure on the frontispiece of Frohawk's *Varieties of British Butterflies* is apparently of Cabeau's *lugenda*.

We should state that we know of only two specimens, in England, such as that illustrated in Seitz (1906), which is actually the extremely rare ab. *monophana* Cabeau. One is the male described on page 106 of Vol. 1 of Barrett's work and alluded to on p. 179 of Vol. 75 of *The Entomologist*. There is also a male in the Tring Museum. In our experience, with these two exceptions, whenever there is just a trace of the white band remaining, this is on the hindwing and not the forewing. Nevertheless, it is only fair to mention that in the collection of Mr. E. L. Bolton there is a female upperside in which three of the wings are typical, but one hindwing (the left) has no trace of white. This remarkable specimen was bred out on 13th July 1906, from a Northants larva, by E. A. Rogers. Incidentally, the aberrant hindwing in this specimen has distinct marks of "raying": see under (d).

It is generally held that *iole* and *semi-iole* are usually due to shock conditions of heat or cold during the *period of change* from larva to pupa. The gene is always in the species, but needs only to be put into motion. The temperature required is probably quite critical: too much of heat or cold, as the case may be, is no more likely to produce the variation than is too little. In nature it must be caused by exceptional (but, by hypothesis, natural) and sudden changes of temperature.

The shock which puts the variation gene into action has been given artificially in the case of *Aglais urticae* L.; ab. *nigra* Tutt being thus produced by subjecting the larva to intense cold (or careful heat) after it has gone into set for pupation (not necessarily after the process of pupation has actually started). No such artificial induction has yet succeeded in the case of the Purple Emperor. There, the duration and degree of influence remain unknown; but abruptness, either of application or discontinuance, is probably essential.

It may be mentioned, however, that the personal view is held by I. R. P. H. that shock to or profound disturbance of the larva in the last instar (e.g. in the matter of feeding) may have the same effect.

*Iole* and *semi-iole* (they are but degrees of the same range of variation) are usually rather late in emergence. This brings us to the point that in nature this variation is probably more common, *potentially*, than may ever appear. Aberrations generally are so comparatively scarce in the field, as they are, because such abnormal specimens usually—under natural conditions—have difficulty in emerging at all; and so, even if they do emerge, often are cripples. Exceptional weather conditions may however, on occasion, favour the emergence of such “difficult” specimens; and hence the mistaken notion becomes current that such conditions, for example, as a thunderstorm, have actually engendered aberrations.

Even so, *iole* (as usually known) on the wing may not be so excessively rare as is generally supposed: without the white markings the insect is very much more difficult to spot in flight. And it is another myth to suppose that the aberration was virtually confined to Chattenden. Further, while *iris* is nearly always both elusive and withdrawn, we have found aberrations in this range even more so than is the typical insect. In the course of all his career (and despite the many years of absence abroad), I. R. P. H. has seen wild two or three full *iole* (or “lugenda”) and four or three *semi-iole*, as the case may be. R. E. S. has seen two *semi-iole*. All of these insects were males. It may be of significance, or perhaps just coincidence, that all these specimens were observed in localities on the London Clay.

Most certainly, “black” is rarer in the female than in the male. Seitz (1906) says that *iole* is known in both sexes: the term must be regarded as in its wider application. As regards England, only one female full *iole* has ever been recorded for certain. It has been suggested that the figure (upperside) of full *iole* on page 72 of Edward Newman’s book may be of a female. According to the text it is certainly not a figure of the *iole* (male) described there. But efforts to trace the specimen figured, in the F. Bond collection (embodied in part in the Hope Museum collection at Oxford and in part in the Tring Museum collection), have been unsuccessful. The one certain one is Mr. A. J. Wightman’s famous bred specimen of 1943, which was shown at the South London Society’s Exhibition of that year. Some of the circumstances attaching to the obtaining of this unique and precious insect are not so famous; and, as related by Mr. Wightman to I. R. P. H., are here worth recording.

Mr. Wightman was asked by the British Museum of Natural History to procure three larvae of *iris* for blowing and preservation as such. He duly collected three full-grown larvae in Sussex—I. R. P. H. has been

shown by him the very bush on which all three were collected at the same time—but before he could despatch them he was informed by the Museum that the larvae were no longer required. Mr. Wightman accordingly brought them through. Even before emergence it became evident to him that one of the pupae was going to produce something unusual; for in the last hours, through the pupa case (which was thin) he could not see any trace of white. Pains were taken to preclude any failure of emergence.

Incidentally, both I. R. P. H. and R.E.S. have always felt distaste for the practice of preserving larvae: I. R. P. H. has in lieu a hand-coloured drawing in his cabinet. In the case described it is to be observed that if the original intention had been carried out, a unique specimen would have been lost. The other two larvae produced quite normal imagines; and here it is known that there was no shock, accidental or artificial, either to the pupa or to the larva when in set. It appears then that, in this instance, we may have to fall back on the theory of shock to the feeding larva.

It may be remarked that specimens may not infrequently be taken showing some narrowing of the white bands of the upperside, without however in any way attaining the rank of *semi-iole*.

It is perhaps appropriate here to mention *extension* of the white markings. This is obviously minor variation, and we do not say that it attains in England so great a degree as to be classed under *thaumantis* Schultz (Seitz. *Pal. Rhop.*, p. 161).

(g) *Underside aberration concomitant with aberrations of the previous section.*

Variation in the “iole” (*sens. lat.*) range of the upperside has been remarked on as above: what we are mainly concerning ourselves with here—and this is really the backbone of the paper—is the variation of the underside concomitant to *iole*, *lugenda*, and *semi-iole* uppersides.

It had been our original intention to describe as separate aberrations the usual undersides of certain upperside aberrations in the *iole* range. As regards the usual underside of *iole*, we had intended to coin the name “pariole”. We are, however, advised that the British Museum considers *iole* as a whole, comprising both upperside and underside, and that the essential feature is total absence of white markings on both surfaces. It certainly is true that, apart from the matter of white spots (and apart from a very few major exceptions such as aberrations *sorbioduni*, *hindenburgi* and one other—see below), the underside of not only *iole*, but of *lugenda* as well, seems to fall into the same regular general pattern: as is exemplified in the figures given in Vol. 1 of Frohawk's *Natural History of British Butterflies* (underside figure No. 23 on Plate 29), and *Varieties of British Butterflies* (underside on Frontispiece). Indeed the congruency just mentioned strengthens our belief that there is no real justification for the distinction between *iole* and *lugenda*. We leave the matter of possible “pariole” (and the adaptation of this designation to fit the underside of *lugenda*) open for the present.

Incidentally, it may be mentioned that the underside of *ab. nigrina* of the White Admiral conforms to a very regular pattern.

In the case of undersides accompanying *semi-iole* (*iolata*) uppersides, the position is more complicated. A large proportion of the undersides of this aberration are not significantly different from the typical. Both I. R. P. H. and R. E. S. possess self-taken male specimens of *semi-iole* (i.e. upperside) of which the undersides are indistinguishable from that of any other Purple Emperor. Some other examples have a reduction in the white band of the hindwing underside, but not of the forewing (even where there is reduction on the upperside thereof). A few have this situation reversed. Correspondence in this respect of the underside with the upperside is actually an extreme rarity, and so far we have been able to find only three examples thereof. One of these is a male specimen in the R. E. S. collection labelled as bred by Eltringham from an Oxford larva, emerging 11th August 1919 (an unnaturally cold summer); there is a similar specimen in the Tring Museum, and I. R. P. H. has seen one other.

We had proposed to coin the designation "subiole" for such an underside as the one just mentioned, since here we are faced by the paradox that under the present designation regular *semi-iole* (considered as the entire insect) is very much more rare than any of its subordinate variations. On the other hand, it seems unfair to give a special name to something which amounts to no more than a gradation in a long related series; so we are leaving this subject also open for the time-being.

It appears at present that a separate aberrational designation for the underside of a specimen whose upperside is anywhere in the *iole* range is justified only when the subject is of a most striking and unusual, indeed startling, nature: such are ab. *sorbioduni* Heslop (*Ent. Record*, 73: 59) and ab. *hindenburgi* Mecke. We do not think that this latter underside aberration has yet occurred in England: but to illustrate the point that description of new underside aberration is justifiable only in the most striking cases, we may mention that while this underside is "of normal pattern, the ground colour is deep black and washed with grey". The upperside appears to be *lugenda*. In this instance, and since Seitz appears to have overlooked the fact that this aberration is largely constituted by its underside, we are unable to agree with this work that the insect is indistinguishable from *iole*.

Reverting to *sorbioduni* Heslop, which also has black shading, we must observe that this remarkable underside aberration not only diverges strongly from, but also superimposes on, the underside normally associated with *iole* and is greatly more complex generally.

To the category postulated in the last paragraph but one we are now able to make one worthy addition, underside ab. nov. *chattendeni*: see formal description below. The most immediately arresting feature of this is the absolute truncation of the broad white band at the costal edge of the hindwing. The upperside is *lugenda*.

We should add, to wind up this section, that we know of no instance of a markedly aberrational underside of *iris* in conjunction with a typical upperside.

#### (h) *Variation of ground colour of upperside.*

At least two specimens, both female, with "light" or "pale" hindwings appear to be known: see *Entomologist*, 75: 155; and 76: 55.

Finally, there is that specimen seen wild by I. R. P. H. in Wilts. in 1956 (in the first place with its wings open at rest on his dustbin), in which the white markings were normal, but the whole of the ground colour was replaced by light grey with a faintly bluish tinge. The vision haunts him yet.

## PART II. FORMAL DESCRIPTION

### Nov. ab. *chattendeni* Heslop and Stockley

Underside only. The *forewing* is without a trace of the white band: the ocellus is virtually normal: there are two white sub-apical spots: the ground colour is a deep blackish-brown. On the *hindwing* the light band is virtually normal in extent (an extraordinary feature in view of its complete absence from the forewing): the light band is heavily peppered with bluish-black scaling: the basal third of the wing is bluish-grey: the middle third (apart from light band) is rich deep chestnut: the terminal third is grey faintly suffused with light chestnut: the terminal margin is bluish-grey.

Quite apart from the remarkable tone of the ground colour on this surface, it is to be noted that the colour areas are sharply contrasting.

The Type specimen, a male, is in the E. L. Bolton collection. It was taken by Bentley at Chattenden in July 1878, and bears the label accordingly. The upperside is *lugenda*.

6th March 1961.

## *Opisthograptis luteolata* L. at the Light Trap

By R. F. BRETHERTON, C.B., M.A., F.R.E.S.

In his two recent papers (*Ent. Rec.*, **72**: 229-235 and **73**: 34-39) Mr Lanktree has asked some pretty riddles about the life-history of *Opisthograptis luteolata* L., to which certain answers can only be found by systematic breeding out-of-doors from stock from several different types of locality. This would remove the reproach that, because the moth is so common, nobody has bothered to find out much about it.

In the meantime it may be of interest to see what indirect evidence can be had from records of its appearance at my light trap at Ottershaw, North-West Surrey, during the nine years 1952 to 1960. A summary of these is given below. The standard Robinson trap, with an 85 watt mercury vapour bulb, has been operated on the open lawn under identical conditions over the years. But, as is noted in the summary, there were a few periods in which it was not operated at all during a weekly period. In others, it was not run every night; and in these cases, in order to give comparability, the actual score for the week has been raised in the summary proportionately to the results for those nights on which it was actually run. I am satisfied that the possible errors introduced, either by the gaps or by the adjustments, cannot seriously affect the broad results.

It is clear that at Ottershaw there are two main periods of abundance for the moth. The first, varying in precise date according to the earliness or lateness of the season, begins with the first hot spell in May, and numbers usually remain high for about three weeks. There



NUMBERS OF *OPISTHOGRAPTIS LUTEOLATA* L. RECORDED IN A LIGHT TRAP AT OTTERSHAW, N.W. SURREY, 1952 to 1960.

Year	First. Dates	Total for Year	April			May			June			July			August			September			October			Last Dates			
			15/23	24/30	1/8	9/15	16/23	24/31	1/8	9/15	16/23	24/31	1/8	9/15	16/23	24/31	1/8	9/15	16/23	24/30	1/8	9/15					
1952	1st May	487	—	—	26	79	90	23	12	14	12	16	n.a.	n.a.	7	5	10	32	30	105	22	—	3	—	1	Sept. 8; Sept. 20; Sept. 23; Oct. 9.	
1953	13th May	263	—	—	—	1	15	36	40	21	—	1	4	—	n.a.	n.a.	6	10	37	62	26	2	—	2	—	Sept. 9; Sept. 27.	
1954	25th May	209	—	—	n.a.	n.a.	—	24	14	8	11	2	6	13	11	6	10	6	8	44	42	2	2	—	—	Sept. 9; Sept. 13; Sept. 23.	
1955	8th May	340	—	—	1	—	—	18	36	14	7	3	5	1	2	3	—	n.a.	94	82	73	—	1	—	—	Sept. 8; Sept. 17.	
1956	28th May	183	—	—	2	6	8	26	16	35	2	—	—	1	—	—	—	3	12	8	15	42	8	—	—	Sept. 22.	
1957	22nd Apr.	112	1	—	n.a.	14	—	—	6	—	6	4	14	—	2	1	13	21	24	n.a.	n.a.	5	—	1	—	Sept. 9; Sept. 25; Sept. 15.	
1958	14th May	167	—	—	—	1	—	9	16	2	13	1	8	4	6	1	—	n.a.	37	29	32	8	—	—	—	Sept. 14.	
1959	26th May	370	—	—	2	91	5	25	7	8	7	8	8	4	1	1	46	35	63	35	20	4	—	—	—	Sept. 17.	
1960	7th May	365	—	—	12	42	13	13	12	6	25	8	n.a.	n.a.	2	—	20	19	88	51	30	22	2	—	—	Sept. 17.	
Total: 1952/60		2,496	1	—	43	234	131	174	159	108	83	43	45	23	31	17	105	126	393	416	260	87	16	3	—	1	n.a. = light not in action.

n.a. = light not in action.

is, however, no sharp end to it. It trails away with fairly steadily-falling numbers through the second half of June and most of July, until a nadir is reached in the last week of that month. The second period of abundance, also varying a little in date from year to year, occurs in August and early September. But, unlike the first, it has a sharply defined end. In most years the numbers drop from a high level to nothing during the second or, occasionally, the third week of the month. In some years, however, there are isolated appearances later in September, and in 1952 there was a singleton on 9th October. In total numbers the August/September emergence was, for the nine years taken together, more than half as big again as that between early May and mid-June, and about 30% bigger than that of May, June and July together. But in 1952 and 1956 it was rather less than May to July, and in 1955 and 1960 it was more than double. The range of variation in the totals for whole years, from 112 in 1957 to 487 in 1952, was absolutely considerable, but not greater than for many other common species.

In some previous notes on multi-broodedness among moths in North-West Surrey (*Ent. Gaz.*, 4: 287-295 (1953) and 11: 164-166 (1960)), I have treated *O. luteolata* as an ordinary bi-voltine species with some tendency to produce a partial third brood—represented by the few late September and October stragglers—in very favourable years such as 1952 and 1959. But closer study of these records suggests that this needs to be reconsidered. It seems fairly certain that the main burst of the May and early June emergence must represent insects which had overwintered as pupae. This would correspond with my own (and Mr. Lanktree's) experience of bred *O. luteolata*, and, in any case, there seems to be insufficient time in the spring before the main emergence to allow for feeding up of larvae and a full pupal stage. It also seems reasonable to regard the sharply defined emergence in August and early September as consisting of the progeny of the May and early June moths. So far the species still seems to be bi-voltine. But the prolonged "tail" to the first emergence, running through late June and July, does not seem to fit in. If these late June and July moths were also double-brooded, one would expect to find a correspondingly long drawn-out tail to the August/early September emergence, running on to nearly the end of October. The late-September and October stragglers actually recorded may, indeed, have originated from the late-June/July moths. But they are too few, and too irregular in their appearances by years, to account for anything like the whole of the progeny of those moths.

The easiest explanation of the Ottershaw records seems to me to be that there are two "streams" in the local *O. luteolata*. The first, and in most years considerably the stronger, is bi-voltine, the mean dates being from about 10th May to about 8th June, and from 8th August to 8th September. The second, and weaker, is mainly uni-voltine, usually from about 16th June to 21st July; but the beginning of it probably, in suitable weather conditions, overlaps with the end of the first brood of the bi-voltine stream. Occasional cross-pairings at this point, rather than any tendency towards tri-voltinism, probably account for the few late September and October stragglers. Members of the bi-voltine stream in my view certainly hibernate as pupae. What the uni-voltine

stream does in winter remains to be determined, but the figures are perfectly consistent with a slow development involving hibernation in the larval state.

Such a simultaneous and parallel existence of uni-voltine and bi-voltine streams in one species in the same place is an interesting biological situation. But a moment's reflection shows that it is likely to occur, somewhere or other, in many species which have a continuous distribution in Britain and are bi-voltine in the South but uni-voltine in the North. It would be unreasonable to expect that in Carlisle all will be of one constitution and in Gretna all of the other: there are too many runaway marriages! And, given the enormous variations of the British climate from one year to another, the band of "mixed" territory may well be very wide. Within it, a succession of warm summers may for a time favour the dominance of the bi-voltines, but this will presently be reversed by the reappearance of conditions which help the uni-voltines, so that, over a period, an oscillating balance is maintained. Moreover, one could well find that in any one year the proportions of uni-voltine and bi-voltines differed widely in different types of localities within a limited area. My own Ottershaw records refer to a rather sheltered biotope on a light, well-drained soil, with probably almost minimum variations (at least for an inland locality) between lower-air temperatures by day and by night: it is thus favourable to rapid larval development. It would be interesting to have similar records of *O. luteolata* from a trap placed in a marsh or on a cold, clay soil; I should be rather surprised if they did not show an appreciably different pattern. Most of the above analysis is clearly still in the realm of hypothesis rather than of ascertained fact.

One other point deserves mention. Bree's "April emergence" is represented in these Ottershaw records only by a single example on 22nd April 1957, which was, until the beginning of May, an almost unprecedentedly early spring. Another was noted at Ottershaw on 24th April 1948, also an early year; and I have one from Chiddingfold which was taken on 8th April 1955. But I believe the appearance of *O. luteolata* before May to be very exceptional under natural conditions. It is possible that Bree's reference may have been to bred specimens.

Ottershaw, Surrey. 28.ii.1961.

## Notes on *Acrocercops imperialella* Mann. and its Occurrence at Wood Walton Fen, Hunts.

By S. WAKELY

On 24th September, 1960, Mr. F. G. Smith invited me to accompany him by car to Wood Walton Fen. Having heard and read a lot of this locality I was only too glad to accept his kind offer. On arrival it was realised that the date was too late for most of the local species to be found at this favoured spot and after a fruitless search for larvae of *Pyrallis perlucidalis* Hb. on thistles I began to look for larvae of *Ethmia funerella* Fabr. on *Symphytum officinale* (comfrey). The food-plant was locally common, and although a few larvae were found it was obvious there had been many more there earlier in the month.

Numbers of dipterous mines were found in the comfrey leaves, and seeing these mines reminded me that many years ago entomologists used to find the larvae of *A. imperialella* on comfrey, so we began to examine the larvae in these mines and try to find some that were not so obviously dipterous. The larger larvae were recognisable at a glance when dipterous, but some of the very small ones required the use of a lens. After a lot of time spent with no results suddenly a mine was found which looked different. An examination of the larvae revealed that they had head and legs similar to various species of leaf-mining lepidoptera, and it was fairly certain that at last *imperialella* had been re-discovered—a new county record in the bargain. Our time was beginning to run out by now, but we both managed to get a few more mines before it was time to take the car back home.

On examination at home it was found that some of the larvae were very small. I did not anticipate any trouble with these as I had a huge plant of Comfrey growing in the garden, but unfortunately they would not leave the old mines and go into fresh leaves. I tried to get them to leave by extracting some and placing them on a fresh leaf which had been scratched with a needle to loosen the outer skin, but even this failed. Fortunately seven or eight were able to spin up in characteristic *Gracilaria*-like cocoons—a thin layer of opaque silk stretched over a leaf depression or round the angled edges of their plastic container. The larvae were whitish when very small, but became pale green when larger, when they were most difficult to detect in the leaf even when held up in front of a table lamp. When full-fed and leaving the mine they became bright red in colour and the silk cocoon was also coloured red, probably from a hardening liquid discharged by the larva just previous to changing to the pupa state. About a third of the larvae died, presumably because they had been collected when too small. Another third spun a layer of silk on which they rested and appeared too weak to finish the top of the cocoon and soon died. Individual leaf-mines contained from one to three larvae.

Owing to the scarcity of records of this extremely local species I decided to try and force one out in warmth before recording it. Accordingly I brought one cocoon indoors in mid-January and was rewarded by getting a moth to emerge on the 16th February. It was much darker in colour than I had anticipated and looked very much like *Parectopa ononidis* Zell.—a species I had bred from clover on several occasions. An examination with a lens showed that the blackish ground colour had a decidedly golden sheen, hence Meyrick's description: "Forewings dark yellowish-fuscous". The apical shining white spot was also distinct—a marking not present in *ononidis*.

The earliest record of this species in Britain seems to be of a specimen taken by J. C. Dale at Glanville's Wootton, Dorset, on 25th May, 1840, and said to be in the Hope Department, University Museum, Oxford. There is doubt about this specimen being correctly determined however, as Sir Eustace Bankes, after a critical examination of the specimen, pronounced it to be *P. ononidis*. If this specimen still exists perhaps it could be re-examined and the determination recorded.

Stainton in his *Lepidoptera: Tineina*, 1854, p. 201, mentions Dale's capture and adds: "A specimen is in Mr. Shepherd's collection".

In addition to comfrey, *imperialella* has another foodplant, namely *Pulmonaria angustifolia* (lungwort). Stainton, in his *Natural History of the Tineina*, 8, 1854, gave yet another foodplant—*Orobis niger*—but later admitted (in the *Entomologist's Annual* for 1868, p. 147) that this was an error due to the fact that he had mixed two closely allied species under the same name. Unfortunately this error was not found out until after Vol. 8 of his *Natural History of the Tineina* had been published, with the result that the species figured on Plate V was the *Orobis niger* species, namely *G. hofmanniella* Schleich and not *imperialella*. It might be as well to mention here that at this time the two species in question were placed in the Genus *Gracilaria*.

Stainton calls attention to his mistake in the *Entomologists' Annual* for 1868, pp. 147-9, wherein he describes in detail the two distinct species. Then in a further effort to put the matter right a figure of the true *imperialella* appears in the *E. A.* for 1870, together with the drawing of a wing of *hofmanniella* for comparison and to show the difference in markings.

The Rev. Horton recorded one from near Worcester in 1860. Stainton suggested this was probably *G. hofmanniella*. As *Orobis niger* is a local plant only recorded from rocky places in Scotland, this diagnosis can be discounted, and it seems rather an unsatisfactory record.

In 1869 larvae of *imperialella* were found in leaves of *Symphytum* at Wicken Fen, Cambridgeshire, and in *The Natural History of Wicken Fen* (1923, p. 63) it is given as "sometimes plentiful at Wicken". This probably refers to the larvae.

W. Farren, in *The Entomologist* for 1886, p. 82, says: "*G. imperialella* larvae on *Symphytum*; very difficult to get at the right age; either too young or gone". This may explain why most of my larvae died.

There are very few specimens of this moth in present-day collections. In the Bankes Collection at the British Museum there is a good series, mostly without labels, but some with data were from Wicken and the New Forest, 1908 and 1909. It seems extremely likely that the New Forest specimens came from *Pulmonaria*, a local plant not infrequently found there as well as in Dorset and the Isle of Wight.

The Rev. O. Pickard Cambridge took one in Morden Bog, Dorset, on 22nd August, 1892, and Bankes also got one from the same locality on 12th August, 1908—on *Pulmonaria angustifolia*: probably a larva in each case.

There may be other records which I have failed to find; if so, it would be interesting to hear about them.

Mr. S. C. S. Brown, of Bournemouth, tells me that he found a mine in Dorset on *Pulmonaria* in June, 1940, in a lane between Morden and Bloxworth. One moth emerged on 4th August and another was found, fully developed, but dead, in the pupa case. He has asked me to record this as, owing to the war, he never managed to write a note about it for publication.

From the foregoing it will be realised that *imperialella* has always been considered a great rarity, but I cannot help thinking that this was due in some measure to the fact that it is such a small insect. Although a handsome insect under a lens, it has a wing expanse of

only seven to eight millimetres.

The finding of this species in Huntingdonshire suggests that it has a much larger range in Britain than would appear from the published records, and a search for the larvae in suitable places might bring to light other colonies further afield. It is a double-brooded species and larvae should be looked for in June and July and again in September. The mine is on the under-surface of the leaf.

In conclusion I should like to thank Messrs. J. D. Bradley, S. C. S. Brown and W. Parkinson Curtis, who supplied me with lists of references, etc., and without whose valuable help I could not have written this account.

26 Finsen Road, S.E.5.

## Microlepidoptera in Gloucestershire

By J. NEWTON, B.Sc., F.R.E.S.

This list gives a few new county records and some additional information about the present distribution of certain species not contained in *The Microlepidoptera of Gloucestershire* by T. Bainbrigge-Fletcher and T. Glanville Clutterbuck (1938). Several records in that paper are very ancient, and others require confirmation. What I have to report here, I have found since 1953.

### PYRALIDAE

**Laodamia fusca** Haw.: In spite of the absence of heath, I had a specimen to my mercury vapour light on 6.vi.1958. C. G. Clutterbuck took one in 1917 and another in 1945 in Gloucester City, otherwise the species has not been recorded elsewhere in the county.

**Homoeosoma binaevella** Hüb.: Only one record is given for this species by T. Bainbrigge-Fletcher, viz., 1936 at Michaeldean, north of the Severn. An odd specimen has come to my light in July for the past few years, and last September I collected about 20 larvae from the seedheads of thistle (*Cardus lanceolatus*) in Tetbury.

**Eurhodope suavella** Zinck.: Recorded only once in the Bristol area many years ago. I have taken one only, beaten from blackthorn, near Hawksbury, 13.viii.1954.

**Acentopus niveus** Oliv.: This species was not recorded in the original county list, but in the *Additions and Corrections* given at the end T. B.-Fletcher reported his finding of the species at Woodchester Park in 1938. I think it has been overlooked, as males appear frequently to my light in Tetbury, where there is very little surface water. I have also taken it at Alderley.

**Cataclysta lemnata** Linn.: This is another species which I think must be more common in the county than the dearth of records suggests. I took it at Alderley last year.

**Herculia glaucinalis** Linn.: Only very old records are given for the Bristol area. It has come regularly to my light in Tetbury for several years.

**Pyrausta martialis** Guen.: I took a specimen of this immigrant at ivy blossom in 1956 at Tetbury.

## PTEROPHORIDAE

**Platyptilia pallidactyla** Haw.: It is rather surprising to me that this species is reported as: "little known in the county". I have found it to be quite common throughout the Tetbury area, and I have bred many from the roots of *Achillea millefolium*.

**Alucita baliodactyla** Zell.: Formerly common in the Nailsworth area, T. B.-Fletcher failed to discover it in the latter years of his life. I found it first at Avening in 1957 and I have since bred a few from larvae collected there.

**Leioptilus carphodactylus** Hübn.: Since A. F. Pearcey discovered this species first in 1949 as a new county record, I have bred several specimens from pupae in the seed heads of *Inula conyza* collected near Avening, some nine miles away from Pearcey's locality.

## PHALONIIDAE

**Lozopera dilucidana** Steph.: L. Price reported a locality for this species near Chapman's Cross (*Ent. Rec.*, 70: 152). To this I can add that I have known a colony since 1954 in an old quarry at Tetbury, where *Peucedanum sativum* flourishes.

**Phalonia smeathmanniana** Fabr.: This species is not previously recorded for the county. I took three specimens at Woodchester Park, 16.v.1956.

## TORTRICIDAE

**Cnephasia communana** H.-S.: Quite common in the Tetbury-Avening area. I have checked the genitalia of this species and although a new county record, undoubtedly it has been confused with others of the genus.

**Spatalistis bifasciana** Hübn.: The Gloucester list has only one old record for 1905. I have taken it near Hawksbury in June of 1959 and 1960.

**Rhyacionia pinicolana** Doubld.: A few were beaten from *Pinus sylvestris* and also taken at mercury vapour light at Badminton in July 1958-60.

**Ancylis obtusana** Haw.: I first found this species at Hawksbury in 1959 and I took several there again in 1960. This is the first time for many years that the species has been recorded south of the Severn.

**Zeiraphera ratzeburgiana** Sax.: At Westonbirt, first in July 1954, I found it again last year, beaten from *Picea abies* at Badminton. Only once recorded before at Guiting by Clutterbuck in 1924.

**Z. rufimitrana** H.-S.: A new county record. I have taken this species regularly every year at Westonbirt since 1954.

**Epinotia brunnichana** L.: This species had only been separated from *E. solandriana* L. by Sheldon in 1935 and its status in the county was little known at the time of the Gloucestershire list. Undoubtedly it is widespread in the county, and I have found it common in many places.

**E. fraternana** Haw. (= **proximana** H.-S.): A new county record. I found this species firmly established at Westonbirt in 1954, where I have seen it every year since. I have bred several specimens from debris collected under trees of *Picea abies*.

**Apotomis capreana** Hübner.: This species appears always to have been a rarity in Gloucestershire. I have only taken two specimens, one in June 1956 and another in June 1950, both at Hawkesbury.

**Giaphila branderiana** L.: Not previously recorded. I found the larva first at Westonbirt in 1957 and later at Hawkesbury. I have taken the moth for the past three years at both of these places, where there are well established colonies.

**Dicrorampha alpinana** Treits.: The only previous record is given as "Gloucestershire", and is taken from Barrett's Lep. Brit. Isles, XI: 1905. There is a colony here in Tetbury and I took it also last year at Hawkesbury.

**Pammene splendidulana** Guen.: A single record of Clutterbuck's in 1909 indicates the rarity of this species in the county. I have taken one only at Westonbirt in May 1954.

#### GELECHIIDAE

**Anacampsis betulinella** Vari.: This species was not separated from *A. populella* Clerck, by Vari until 1941. In 1948 T. Bainbrigge-Fletcher drew attention to this in a note in *Ent. Record*, 60: 5, 1948, but he had evidently not yet found *betulinella* in Gloucestershire. I took a few at Hawkesbury, and also at Westonbirt last year, along with *populella*.

#### PLUTELLIDAE

**Ypsolophus horridella** Treits.: A new county record. I took two specimens at Hawkesbury last year, beaten out of blackthorn.

**Ypsolophus lucella** Fabr.: A new county record. T. B. Fletcher predicted that this species would be found in the county, and last year I took two specimens at Hawkesbury.

**Acrolepia perlepidella** Staint.: T. B. Fletcher reported in the county list that only very vague and indefinite records existed for this species. Later in *Additions and Corrections* he reported that he had seen the moth flying round *Inula conyza* at Rodborough in 1943. At Tetbury in 1955 I took one specimen which L. T. Ford kindly identified for me. Unfortunately, the old quarry in which I took the moth has since been opened up again, and the plants of *I. conyza* all destroyed. The plant is not uncommon in the area, however, and I hope at some future date to find the larvae.

#### OECOPHORIDAE

**Depressaria atomella** Schiff.: Only one old record for Almondsbury from Perkins's list of 1901. I bred two specimens from *Genista tinctoria* at Hawkesbury last year.



# Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

**Nephopteryx obductella F.v.R.** I first met the late Mr. L. T. Ford at Wicken in 1920, and a friendship began between us that endured without a break until his death. In his obituary notice (*antea*, p. 67) Meyrick's statement that *obductella* was "probably a mistaken record" is quoted. This dictum of Meyrick's<sup>1</sup> was completely unjustified, as Barrett<sup>2</sup> quoted two authentic records before the date of Meyrick's second edition.

A short history of the moth in this country is as follows:—

A specimen was taken by Mr. Sydney Webb on the afternoon of 31st August 1888 on a hill just outside Dover, and another was secured by Mr. William Purdey on the Warren at Folkestone (Barrett<sup>2</sup>). Two were taken near Deal on 16th August 1926 by Mr. and Mrs. H. W. Daltry, but not identified until the winter of 1928, when they were checked by Meyrick (Daltry<sup>3</sup>). In July 1928 I netted about a dozen in the North Foreland district of which I gave an account in the *Entomologist*<sup>4</sup>. I noticed then that a female was buzzing round a marjoram head at late dusk, so the following May I visited the locality and succeeded in finding the small larva. Later I took several of the larger larvae and succeeded in breeding the insect and gave the first account of its habits and life-history in this country in the *Entomologist*<sup>5</sup>. I gave both set specimens and larvae to my friend Ford, who some years later found the larva on the chalk hills near Chilham. Since then the insect has spread throughout the Kentish chalk hills, at any rate as far as the other bank of the Medway, where I saw it a few years ago. *Obductella* is one of those insects, like *Anania nubilalis* Hübn., which raise a question as to why they never established themselves here before. Both are perfectly hardy in the south of England; I have seen clumps of marjoram in which *obductella* larvae were wintering, buried under three feet of snow, and *nubilalis* easily weathered the very severe winters of the first years of the war and of 1947. *Obductella* is, however, except for an odd specimen, a comparatively new arrival in this country. I regularly worked Mr. Daltry's locality for twenty years before it turned up there, and the one on the Kentish downs has been known to me since 1902, and it was certainly not found there up to the outbreak of the war in 1939.

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- <sup>2</sup>C. G. Barrett. *Lepidoptera of the British Isles*, IX, p. 435.
- <sup>3</sup>H. W. Daltry. *Salebria obductella* F.v.R.: confirmation of its occurrence as British. *Entomologist*, **62**: 34.
- <sup>4</sup>H. C. Huggins. *Salebria obductella* in Kent. *Entomologist*, **62**: 52.
- <sup>5</sup>H. C. Huggins. *Salebria obductella* (Lep., Pyralidae) as a resident species. *Entomologist*, **62**: 193.

**Laspeyresia leplastriana** Curt. In the "Record" (*antea*, p. 14) Mr. Fairclough mentioned digging out the pupae of this insect from the stems of wild cabbage at the Warren, and that not only were they parasitised, but some dried up. The moth is, in my experience, common all along the cliffs where the wild cabbage grows from Kingsdown near Deal to the Warren. It is not necessary to dig it out; the frass at the junction of the leaf stalks shows quite clearly where the pupae are and

half a dozen stems should produce a good series if cut and stood in damp sand. I have bred it in this way, and in 1930 I took my friend Fassnidge to Kingsdown; he bred his series from a few stems. It is even easier, however, to net the moth, which may readily be disturbed on a warm day, and it is not difficult to catch.

65 Eastwood Boulevard, Westcliff-on-Sea, Essex.

## New Vice-County Records for British Ants

C. A. COLLINGWOOD

It is proposed shortly to bring out a chart of the vice-county distribution of indigenous British ants in collaboration with Mr. K. E. J. Barrett. In order to make this as up to date and comprehensive as possible, it is to be hoped that interested collectors will send in or publish any outstanding records that are believed to be new. Several recent publications (Yarrow 1954, 1955; Collingwood, 1956, 1957, 1958) have referred to the distribution of species of *Formica*, *Lasius*, *Myrmica* and other genera and some of the records in these publications are amplified where appropriate in the following notes. Only the Irish list (Collingwood, 1958) and that for the Highlands of Scotland (Collingwood, 1961 in the press) can be said to be up to date and there remains an accumulation of unpublished records over the past few years as well as confirmations of some of the older records given by Donisthorpe, 1927. This information is presented here with details of place and date only given in the case of the more local or interesting species; it is obvious that it is only a question of opportunity and time before such ubiquitous species as *Myrmica ruginodis* Nyl., *M. Scabrinodis* Nyl. and *Leptothorax acervorum* Fab. are recorded for every vice-county in the British Isles. All the records listed are mine unless stated otherwise.

*Tetramorium caespitum* Latr. W. Sutherland—Scourie, July, 1949: W. Norfolk—Thetford Warren, 1958; W. Kent—Dungeness, 1959; Midlothian, Greville 1858 in Royal Scottish Museum.

*Solenopsis fugax* Latr. N. Somerset—Goblin Coombe and Brean Down, August, 1960.

*Formicoxenus nitidulus* Nyl. Cantire—Ellory, June, 1957. Derby—Eyam, 1955. Notts—Wigsley, 1955. N. Lincs—Tumby, 1955. S. Devon—R. M. Spooner, 1958 pers. commun. also Lustleigh, 1960. W. Glos—Lower Staunton, 1957.

*Myrmecina graminicola* Latr. Northants—Barnack, 1956. Although widely distributed over the southern counties, there are still distribution gaps which include W. Cornwall, S. Somerset, Wilts. and certain of the Eastern Counties where the species is very likely to occur.

*Leptothorax acervorum* Fab. 1956—S. Wilts; Mid W. Yorks; W. Suffolk; Pembroke; Monmouth; Cardigan; Montgomery; Westernness; Cantire. 1958—Hunts; 1960—Selkirk; N. Wilts; N. Somerset; N. Devon. This widely distributed species has still to be recorded from a few counties in Ireland and Wales and also from W. Cornwall, N. Essex, Hertford, E. Suffolk, Mid Lancs and N.W. Yorks in England.

*Leptothorax nylanderii* Foerst. W. Norfolk—Harling, 1958. Cambridge—Kennett, 1958. W. Kent—Knowle Park, 1959. E. Kent—

Charing, 1959. S. Wilts—Whiteparish, 1960. N. Hants—Eversley, 1960. E. Suffolk—Flatford Mill, 1958. This ant is not uncommon inland in S. England from Gloucestershire to Essex but seems to be scarce in the Southwest where there are only records for S. Devon.

*Leptothorax tuberum* Fab. W. Glos—Durdham Down, Bacchus in Donisthorpe, (1927). This record appeared doubtful to me at one time but I have seen the specimens in the National Museum of Wales. N. Somerset—Goblin Coombe, August, 1960. This species is almost confined to the coast in England. Donisthorpe (1927) recorded it from Worcs., Middlesex and Surrey. The Worcs. record was in error and old museum material I have seen from Surrey have always been *L. nylanderi*. It is best to delete these records pending further substantiated specimens. There are no recent records from Cornwall where the species should be quite common.

*Leptothorax interruptus* Nyl. There are no new records for this species but it is perhaps worth noting here that in addition to Bere Heath, Dorset, where Sweeney (1949) found it, the ant is quite common in an area of Stoke Heath about 2 miles to the south.

*Myrmica ruginodis* Nyl. 1956—W. Perth; Angus; N. and S. Aberdeen; Banff; Cantire; Westernness; Montgomery; Carmarthen; W. Norfolk; W. Suffolk; S. Wilts. 1958—Clyde Isles, A. R. Waterston (Royal Scottish Museum); Hunts. 1960—Selkirk. This ant is now recorded from every county and island group in the British Isles with the exception of Fermanagh in Ireland.

*Myrmica rubra* L. (*laevinodis* Nyl.) 1956—Mid W. Yorks; Carmarthen; Angus; Derby. 1957—W. Ross, A. W. Stelfox (also 1959). 1958—W. Suffolk, W. Norfolk, Hunts. 1959—Montgomery, L. Weatherill; Merioneth, L. Weatherill. 1960—N. Wilts; S. Wilts. This common species is still to be recorded from Cheviotland as well as a few counties in Scotland and Ireland.

*Myrmica sulcinodis* Nyl. N. Aberdeen—Coreen Hills, 1956. Banff—Glenlivet, 1956. N.E. Yorks—Staithes, etc., 1956. Mid-W. Yorks—Pately Br., 1956. Durham—Stanhope, 1956. S. Northumberland—Slaley, 1956. Stafford—Warslow, 1957. S. Perths—Braco, 1959. S.W. Yorks—Ravensmoor, 1957. Cheviotland—Alnwick, 1960. S. Wilts—Redlynch, 1960. Angus—Glen Esk, 1960. Kincardine—Glen Dye, 1960. A very old record for Cornwall requires confirmation and two old records for Glamorgan and Anglesey respectively remain unsubstantiated. These are best deleted together with the Irish records which Stelfox (1927) showed were erroneous.

*Myrmica scabrinodis* Nyl. 1956—Cantire; N.W. Yorks; S.W. Yorks; Montgomery; W. Suffolk; W. Norfolk; Hunts. S. Wilts. 1958—Clyde Isles, S. Ebudes, Outer Hebrides (S. Uist), Royal Scottish Museum. This species is now recorded from the whole of Britain except Lanark, Peebles, Selkirk, Orkney and Fermanagh.

*Myrmica sabuleti* Mein. 1956—Angus; N.W. Yorks; Carmarthen; Montgomery; S. Lincs; Leics. 1957—Dumbarton, A. W. Stelfox; W. Norfolk; Cambridge; Midlothian (Salisbury Crags, 1924), Royal Scottish Museum. 1959—Merioneth; E. Kent; W. Kent. 1960—S. Wilts. W. Cornwall, H. B. Sargent. There are still many gaps in the recorded distribution of this common species.

*Myrmica schencki* Em. N. Somerset—Shapwick, August, 1960.

*Myrmica lobicornis* Nyl. Cantire—Bellochantuy, Artiligan, 1956.

S. Lincs—Boston, 1956. S. Aberdeen—Glenlui, 1957. E. Glos—Stow-on-the-Wold, 1957. Banff—Portknockie, 1960.

*Tapinoma erraticum* Latr. S. Wilts—Plaitford, Hamptsworth, 1960. This area of Wiltshire is part of the New Forest where the species abounds. An old record for Dumfries quoted by Donisthorpe (1927) is unconfirmed and unlikely. I have seen examples of *Lasius niger* in the Royal Scottish Museum labelled as *T. erraticum*.

*Lasius fuliginosus* Latr. Merioneth—Abertafol, Towyn, Happy Valley, L. Weatherill, 1959. Old records have recently been confirmed for Caernarvon, Denbigh, Glamorgan, Northants, W. Suffolk, W. Norfolk, W. and E. Sussex. This species appears to be locally common in the Gower and parts of West Wales and is noticeably abundant throughout the Thetford area of Suffolk and Norfolk.

*Lasius niger* L. 1956—Cantire, Main Argyll, Westernness, Kincardine, Banff, Elgin, Cheviotland, Cardigan, Montgomery. 1957—Radnor, S. Wilts. Old records are also confirmed for Roxburgh, W. Ross, S.W. Yorks, W. Norfolk, W. Suffolk, N. Hants, E. Kent, E. Cornwall, N. Wilts, N. and S. Devon, S. Lincs, Leics, Notts and Mid Lincs. This common ant is recorded from every vice-county of England and Wales and most of Scotland except Peebles, Selkirk, Angus, W. Sutherland, Caithness and the outer islands.

*Lasius alienus* Foerst. Northants—Barnack, 1956. E. Glos—Painswick, 1956. Radnor—Presteign, 1957. N. Lincs—Gibraltar Point; 1958; this series consists of males, queens and workers taken in a sand bank; they have the appearance of exceptionally hairless *L. niger* but have very few to no standing appendage hairs and would key to *L. alienus* according to Wilson (1955). W. Cornwall—Kynance, 1959. S. Wilts—Hamptsworth, 1960.

*Lasius flavus* Fab. 1956—Banff; N. Aberdeen; Kincardine; Angus; Westernness; Cantire; N.E. Yorks; Mid W. Yorks; Carmarthen; W. Suffolk; W. Norfolk; S. Wilts. 1957—Hunts. There are also specimens for Roxburgh and Selkirk in the Royal Scottish Museum. This species which in terms of numbers must be the most abundant ant in Britain remains to be recorded from S. Aberdeen, E. and W. Sutherland and the outer islands.

*Lasius umbratus* Nyl. sensu Donisthorpe (1927). S. Lincs—Ancaster, Uffington, 1956. Leics—N. Luffenham, Elpingham, 1956. Northants—Thrapston, 1958. W. Norfolk—Thetford Chase, J. E. Satchell, 1958. N. Somerset—Goblin Coombe, 1960. There is also a specimen in the Royal Scottish Museum from Arthur's Seat, Midlothian.

*Lasius mixtus* Nyl. sensu Donisthorpe (1927). I am provisionally retaining this name for record purposes pending further discussion of this species complex to be given later. Recent new records for *L. mixtus* include E. Glos—Aston Blank, 1956. Northants—Wansford, 1956. Barnack, 1958. Leics—Elpingham, 1956. Wigtown—Luce Bay, 1957 (also in Royal Scottish Museum). W. Kent—Bedgebury, J. E. Satchell, 1958.

*Lasius rabaudi* Bond. W. Norfolk—Sandringham, Thetford Warren, 1957. W. Suffolk—West Stow, Wordswell, 1957. Thetford, 1958, J. E. Satchell. This species has been repeatedly found on heathland in Surrey and is also locally common in similar areas of sandy heath in East Anglia. Its British distribution would appear to be restricted to such areas but it has not yet been found in similar situations in the

New Forest, Dorset and Devon where it is likely to occur.

*Formica sanguinea* Latr. S. Aberdeen, Kincardine, O'Neil, 1958.

*Formica exsecta* Nyl. E. Ross—Amat, L. Christie, 1954.

*Formica rufa* L. Caernarvon—Trefri, L. Weatherill, 1957. This is an interesting record in that *F. lugubris*, the more northern species of wood ant, is known to be locally abundant in the same general area. Hamptsworth, Franchise Wood, S. Wilts, 1960.

*Formica lugubris* Zett. Main Argyll, Port Appin, E. C. Pelham Clinton, 1958; Clenborrodale, 1959; E. Sutherland—Invershin, 1960.

*Formica fusca* L. Carmarthen; Cardigan; Derby—Melbourne, 1956. Main Argyll—Glenmore (Ardnamurchan); Westernness—Loch Hourn, 1959. These two Scottish records extend the known distribtuion of this species considerably northward. In S. England, it has still to be recorded from Herts and Hunts.

*Formica lemani* Bond. Wexford, W. Cornwall, specimens in the National Museum of Wales; Selkirk, 1960. This species inhabits the whole of North Britain and Wales but there are no records for S.E. Yorks and Pembroke. The only unrecorded counties in Ireland are Westmeath, Offally and Leix. In S. England it is more or less restricted to the higher ground in the Southwest peninsula.

*Formica cunicularia* Latr. S. Lincs.—Wilsford, 1957. West Cornwall—Kynance, 1960. N. Wilts—West Kingston, 1960. S. Wilts—Redlynch, Hamptsworth, 1960. N. Somerset—Brean Down, 1960. Of the more southern English counties where this species should occur, there are still no records from N. Hants, Berks and W. Sussex.

I am grateful to the persons named after particular records for information or specimens supplied and also to Mr. Colin Matheson of the National Museum of Wales and to Mr. A. R. Waterston of the Royal Scottish Museum for permission to examine collections there.

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- N.A.A.S., Burghill Road, Westbury-on-Trym, Bristol. 1.iii.61.

## Notes and Observations

EUPITHECIA PHOENICEATA RAMBUR IN CORNWALL.—I took two specimens of this species during last September in a garden in the Penzance area, in which *Cupressus macrocarpa* was growing freely. The first, on

6th, was found inside my car, as we were leaving about 11 p.m., having evidently been attracted by the interior light as we were packing up. The second, on 16th, came into a Classey trap and was found there next morning.—AUSTIN RICHARDSON, F.R.E.S., Beaudesert Park, Minchinhampton, Gloucestershire. 6.iii.1961.

EUROIS OCCULTA L. IN THE ISLE OF MAN.—A specimen of the grey form came into the late A. V. Hedges' mercury vapour light trap on 19th August last, which I was operating with the permission of Mrs. Hedges.—AUSTIN RICHARDSON, F.R.E.S., Beaudesert Park, Minchinhampton, Gloucestershire. 6.iii.1961.

AN EARLY BUTTERFLY.—At 11.40 a.m. on 1st March, I saw my first butterfly of the year, a Vanessid. It was fluttering low across my garden, and from its size and colour I am almost sure it was *Polygonia c-album* L., but it gained height and flew over the hedge before I could identify it with absolute certainty.—H. SYMES, 52 Lowther Road, Bournemouth. 3.iii.1961.

[I saw one *Gonepteryx rhamni* L. and one *P. c-album* in my garden on Sunday, 5th March, and *Aglais urticae* L. flying over London Bridge, of all places, on Monday, 6th.—Ed.]

LYSANDRA CORIDON PODA IN THE WYRE FOREST.—I have been prompted to record that a single male specimen of the Chalkhill Blue was taken in the Wyre Forest on the Worcester-Shropshire border, on 20th August 1959. I have not been able to trace a previous record from this area so far; Wyre Forest is a coal measure area and this insect is, of course, normally associated with chalk and limestone only.—R. N. ASHTON, 2 Jaffray Road, Erdington, Birmingham, 24. 4.iii.1961.

SOME EARLY APPEARANCES FOR 1961.—The remarkably mild winter, coupled with some very high temperatures for the early months of the year, has brought out many species several weeks ahead of their normal dates, somewhat as in the same period in 1957. In the following list the dates for 1960 are given in brackets.

3rd February, *Erannis leucophaearia* Schiff. (25th Feb.); 24th February, *Orthosia gothica* L. (1st March); *Anisopteryx aescularia* Schiff. (25th February); *Apocheima hispidaria* Fab. (3rd March); 15th February, *Erannis marginaria* Borkh. (3rd March); 19th February, *Orthosia stabilis* View. (11th March); 20th February, *Achlyia flavicornis* L. (29th February); 27th February, *Biston strataria* Hüfn. (11th March); 2nd March, *Orthosia cruda* Schiff. (13th March), *Xylocampa areola* Esp. (13th March); 3rd March, *Cerastis rubricosa* F. (25th March); 13th March, *Lycia hirtaria* Clerck (3rd April); 15th March, *Panolis flammea* Schiff. (5th April).—C. G. M. DE WORMS, Three Oaks, Woking. 16.iii.1961.

EARLY EMERGENCE OF GONEPTERYX RHAMNI L.—On 14th February, a very warm day for the time of year, I saw a brimstone butterfly flying in the garden here.—C. G. M. DE WORMS, Three Oaks, Woking. 10.iii.1961.

HAPALIA FULVALIS HUBN. IN HAMPSHIRE.—In reference to Mr. Huggins's note on this species (*Ent. Rec.*, 70: 162), I took two specimens in Bournemouth, one on 2nd August 1932 and the other on 5th August 1937.—S. C. S. BROWN, 454 Christchurch Road, Bournemouth. 6.iii.1961.

**MNESIPATRIS (TEICHOBIA) FILICIVORA MEYR. IN GLOUCESTERSHIRE.**—A single specimen of this moth came to my mercury vapour light on 16th June 1955, but it was not identified until recently, when a fresh specimen was netted on 4th June 1960. Both insects were taken in my garden at Rodborough, Stroud, Gloucestershire. I am greatly indebted to Mr. S. Wakely for their identification.—L. PRICE, Springdale, Rodborough Avenue, Stroud, Glos. 12.iii.1961.

**TEICHOBIA (MNESIPATRIS) FILICIVORA MEYR. IN KENT.**—This insect is locally common in the town of Ashford, the larvae feeding in *Filix mas* growing in walls and gardens. It appears to be an urban species here as I have not succeeded in finding the larvae in ferns in the surrounding country. *Teichobia verhelulella* Staint. is common in some large and ancient *Phyllipis scolopodendron* in a stream bank at Westwell.—Dr. E. SCOTT, Suomi, Westwell, Ashford, Kent. 18.iii.1961.

**THE EMERGENCE DATE OF EUPITHECIA FRAXINATA CREWE.** In his interesting account of collecting in 1960 (*antea*, p. 11), Mr. Fairclough mentioned *fraxinata* as a possibility at the end of July. This date is much too late, at any rate in this district, and if Mr. Fairclough is thinking of having another go at it, I should recommend the third week of June. The moth occurs very rarely, but regularly at mercury vapour light in my garden, but as I usually take my holiday when it is fresh, I seldom see it in good condition. In my series, I notice one perfect (15th June 1954); one, not so good (2nd July 1955); one, worn (8th July 1958); and I have seen others, not good enough to take, in early July. I have never seen more than two in one year.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea. 20.iii.1961.

**GYPSITEA LEUCOGRAPHA HUBN. IN WALES.**—On 16th March, returning from a successful kite-watching operation in Wales, I stopped for a quarter of an hour to try a sallow tree, between New Radnor and King-ton. Among twenty or so moths on the sheet I was pleased to see three specimens of *G. leucographa* Hübn. This species is not included in Gordon Smith's list of the lepidoptera of north and mid Wales. This is also a very early date.—AUSTIN RICHARDSON, Beaudesert Park, Minchinhampton, Glos. 21.iii.1961.

**GRASSHOPPER SURVIVING BITE OF LARGE SPIDER.**—During September 1960 a large female spider, *Araneus quadratus* Clerck, took up residence in a wild piece of my garden at East Grinstead, Sussex, slinging its almost invisible web between plants of devil's-bit scabious and yarrow. One warm sunny morning it did rather well and caught two large hover-flies. After lunch that day, I looked again at the web and noticed that this spider had caught and bound a fully adult female short-horned grasshopper, *Omocestus viridulus* (L.), which it left suspended in the web. In the meantime it had retired to its hide-out in the flower-head of the yarrow plant.

I removed the grasshopper to verify its identity, and after completing my examination, I tossed it into a web of a smaller species of spider which left it alone. An hour and a half later I noticed that the grasshopper was moving its legs, so I retrieved it and removed the entangling strands of web. As I did so, it became very active. The spider had unfortunately pulled off one of its hind-legs, but when I set it free on the lawn, it seemed none the worse for its horrible experience and immediately commenced eating a blade of grass. It was still alive and

well a week later, after which I returned to Bristol and was, therefore, unable to follow its fortunes any further.—J. F. BURTON, B.B.C. Natural History Unit, Broadcasting House, Bristol, 8.

**HIBERNATING LARVAE AND THE WET WINTER.**—The exceptionally wet autumn of 1960, followed by a mild wet winter might have been expected to be most unfavourable to the survival of hibernating larvae.

I had larvae of three species that went into hibernation. Of these all my thirteen *Parasemia plantaginis* L. perished; a great disappointment, as I had hoped to breed a few var. *hospita*. I had better luck with *Dasychira fascelina* L. of which more than fifty per cent. were still alive on 2nd March. They were the progeny of two females, A and B, and were divided into three batches. Of brood A, fourteen were kept in a celluloid cylinder cage near the open window of a garden shed, facing west and getting no sun in the winter, and of these, eight were surviving. Eight were sleeved out on a willow bush in the garden, and only two survived. The seven larvae of brood B were kept in a sleeve supported by a cut twig of willow in the shed, and six of these were living. From this it would seem that the shelter of the shed was a healthier place than a sleeve exposed to the elements.

The third species was *Diacrisia sannio* L. There were thirty-two of these comprising four 1960 second brood larvae, sleeved out on 20th September, and twenty-eight third brood larvae, twenty of which were sleeved out on 20th October and eight on 5th December. By this date, two of the third brood larvae had reached their final instar, but neither pupated; one made a feeble attempt to spin a cocoon at the end of December, and the other survived until the end of January. Both were kept in a warm room, never below 56°F., but neither developed the healthy appetite of larvae in their final instar last August, and both eventually shrivelled up. All the thirty-two larvae were kept in a tent-shaped sleeve over a flower-pot containing a growing plant of dandelion, another of narrow-leaved plantain, some cut twigs of heather, and a few dry leaves. The pot was given partial shelter from the weather. I turned out the contents of the sleeve on 1st March and found six larvae still alive. This was not a very good percentage, but I think the prolonged wet weather was partly to blame, as several of the dead larvae were infected with mould. Anyhow, I was pleased to have brought at least a few larvae of this difficult species through the winter.—H. SYMES, 52 Lowther Road, Bournemouth. 3.iii.61.

**OXFORDSHIRE PRUNI.**—The reference to E. B. P.'s "personal discovery" of *Strymonidia pruni* L. in a "specific" spot near Oxford ought not to stand uncorrected any longer. "First capture", as originally related (*antea*, 72: 124) is correct, but "personal discovery" (*loc. cit.*, 249) it could not have been. Mr. Bretherton has shown (in private correspondence) that E. B. P. could evidently only have been referring to a particular occasion, the details of which are known. On that occasion, E. B. P. was visiting Hell Coppice where *pruni* had been previously discovered by Mr. W. F. Burrows. As soon as realised, the point was conceded in a letter to Mr. Bretherton, with copies to Mr. Symes and the Editor, but as no further mention of the subject has appeared in print until now, it is hoped the initiative taken herewith will settle the matter beyond doubt.—D. LANKTREE, 13 Richmond Road, Oxford.



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*with the assistance of*

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# Further Comments on the Early Stages and Northern Cycle of *Opisthograptis luteolata* L. (Lepidoptera)

By P. A. DESMOND LANKTREE, F.R.E.S.

## LARVAL VARIATION

In a note published concurrently with the last paper<sup>1</sup> on the species, Captain C. Q. Parsons mentioned (antea 151), a Dr. Wright's "stating that the larva does differ in colour according to its foodplant, and that the double-pointed hump varies in size considerably".

As explained elsewhere, the book ("A Few Nature Notes", circa 1937-38), by Dr. Wright of Braunton, Devon, does not appear to be in the Radcliffe Library and has otherwise remained elusive, but the statement quoted above is appreciated, and may itself be briefly considered.

With regard to the larval colour forms, Dr. Wright's statement seems to be in agreement with Professor Poulton's earlier conclusions as given by Barrett and discussed in the last paper. Professor Poulton established that variation in these colour forms is environmentally produced. As it follows that such variation is not genotypic, it might have been added in the last paper that this answers at least two questions on the larva listed under the heading "Summary of Information Required on Early Stages" given at the close of the first paper<sup>2</sup>. That is to say, as colour variation in the larva is phenotypic, (2nd last question), selective breeding for this factor is unnecessary, (last question), and it is also not at all improbable that any colour change shown by the larva during growth may be quite unconnected with any diapause undergone (3rd last question).

The further factor of variation in size of the dorsal hump is noted with interest, but without comment, the text not having been seen.

## NORTHERN CYCLE

It will be recalled that Barrett stated: "There is no appearance of double-broodedness in its more northern range, and doubtless the overlapping broods, noticed in the south, are there absent. So far as is known, it has not been taken further north than Moray and the Hebrides. . ."

It will also be remembered that the present writer suggested that if Fig. 2 in the former paper (antea 38) should subsequently be found correct in general for the southern cycle, the northern one would seem to present complications. Some of these were indicated by several questions, but these may be summed up in three questions as follows:

The first asked how, if the southern cycle extended to Scotland, the voltinism represented in Fig. 2 might be affected in the species. Such a question presupposes the absence of a totally univoltine and separate northern race.

The second, asking if the northern cycle had become so adapted as to be regularly univoltine, is virtually the same as asking if there is a totally univoltine and separate race present in the north. From Barrett's remarks the inference might be taken that such might be

the case. If this were so, a further interesting question that would naturally follow would be, where is the zoogeographical dividing line between such races?

The third question asked what the cyclic products might be of crosses between out of phase members of the southern type cycle as portrayed in Fig. 2, and this infers consideration of a genetic control of diapause.

To refer to the third question first, it should be mentioned that while such crosses might be experimentally arranged without much difficulty (they possibly occur in nature anyway), and the results literally recorded, their interpretation might not be at once obvious, as other factors may exert a modifying influence. Thus Dr. Wigglesworth<sup>3</sup>, writing specifically of the well known case of *Bombyx mori* (in which voltinism differs among its various cultivated races), says: "Voltinism is to some extent hereditary; but when the races are crossed, clear cut segregation does not occur. For the voltinism of the offspring is influenced by the temperature at which eggs of the preceding generation were incubated. . . and by the effect of temperature on the larva. The voltinism of the egg seems in fact to be determined by some influence from the somatic cells of the mother". He goes on to explain that voltinism is generally uniform throughout the egg batch from a single female, and by transplantation of ovaries in the larval stage from one known stock to another that is different, the ova always show the voltinism of their new host.

Again, in writing specifically of *Telea polyphemus* (in which voltinism varies in different regions of its North American distribution), Dr. Wigglesworth says: "Voltinism in this species is regulated in large measure by environmental factors (exposure of the last larval stage to a falling temperature for about a week induces the pupa to become dormant), but the capacity to respond seems, within certain limits, to be dependent on the genetic constitution of the stock—many stocks being heterozygous in their genetic constitution relating to voltinism".

Dr. Wigglesworth sums up with a warning as follows: "In general it seems that many of the cyclical diapause phenomena of insects are in fact induced by seasonal changes of one sort or another. But the arrest of development may be determined long before it becomes apparent. . . and so the active factor is liable to be overlooked and a false impression created that there is an internal rhythm".

So if *O. luteolata* should subsequently be shown to be part bivoltine in its southern cycle as figured in the last paper, genetic control may be expected, but possibly modified in effect by environmental factors. To what extent this might be so in some regions is tentatively discussed further on from some new material, but as so many factors could be involved, confirmation can only come from breeding the species under known conditions.

To refer next to the second question, that is, as to whether there is a separate northern race which is totally univoltine: there seems now to be some evidence which suggests that this may not be the case.

In response to a request for any information he might have on this species in its northern distribution, Dr. C. B. Williams has, with great kindness, placed his light-trap records, at the writer's disposal with carte blanche for their use. The records, extending over the five



year period 1955-1959 at Kincaig, have been set out in the accompanying tables in such a way as to emphasise the comparative total annual light-occurrence periods, and the intervals between occurrence. We are fortunate to have such continuous information available from the highlands, and from so reliable and distinguished a source.

Dr. Williams says that trapping started about the 20th May 1955, but was not regular until the end of June of that year: trapping ceased in the area at the end of August 1959.

Records of *Opisthograptis luteolata* L., trapped at light at Kincaig, Inverness-shire, by Dr. C. B. Williams over the five-year period, 1955-59.

1955		1957		1958		1959	
86 day period	13 June 2	91 day period	3 June 2	80 day period	7 June 1	80 day period	20 May 1
	4D—		8D—		8D—		3D—
	18 June 1		12 June 1		16 June 1		24 May 1
	1D—		13 June 3		8D—		1D—
	20 June 2		14 June 2		25 June 2		26 May 3
	39D—		1D—		26 June 2		27 May 2
55 day period	30 July 1		16 June 1		27 June 1		28 May 5
	37D—		2D—		28 June 2		2D—
	6 Sept. 3		19 June 1		29 June 3		31 May 2
			20 June 1		6D—		1D—
	Specimens: 9		6D—		6 July 1		2 June 2
			27 June 2		19D—		3 June 2
58 day period			5D—		26 July 2		4 June 2
	1956		3 July 1		7D—		5 June 2
	25 May 1		7 July 4		3 Aug. 1		5D—
	2D—		4D—		8D—		11 June 9
	28 May 1		12 July 1		12 Aug. 2		12 June 2
	1D—		13 July 1		4D—		13 June 1
80 day period	30 May 1		2D—		17 Aug. 1		14 June 3
	9D—		16 July 1		1D—		5D—
	9 June 1		17 July 2		19 Aug. 1		20 June 1
	10 June 1		4D—		16D—		1D—
	11 June 5		22 July 1		5 Sept. 1		22 June 4
	3D—		23 July 1		Specimens: 21		23 June 1
86 day period	15 June 1		3D—				24 June 3
	1D—		27 July 1				25 June 1
	27 June 1		Specimens: 26				26 June 3
	3D—						27 June 4
	21 June 8						4D—
	22 June 5						2 July 1
80 day period	23 June 2						1D—
	24 June 1						4 July 1
	17 June 2						6D—
	2D—						11 July 1
	30 June 2						10D—
	1 July 1						22 July 1
80 day period	2D—						23 July 1
	4 July 4						24 July 1
	7D—						2D—
	12 July 1						27 July 1
	3D—						28 July 1
	16 July 1						9D—
80 day period	17 July 1						7 Aug. 1
	3D—						Specimens: 63
	21 July 2						
	Specimens: 42						

Last dates for each month (except for last month of each year) italicised.

10D—=10 days interval, etc.

Total no. of specimens recorded in 5 years: 161

He also drew attention to the fact that "in 1955, which was *very* hot and *very* dry, there was only one (record) in the whole of July and August, and evidence of a second emergence in September". This observation is most interesting because, allowing for trapping not being regular till the end of June, apart from the single specimen on 30th July, there would have been an interval of 66 or more days before the occurrence of the next solitary visitor on 6th September. Heat and dryness in excess of the average for the region then, may be factors directly, or indirectly (through effect on the foodplant), contributing to retardation of development in one stage or another.

One of the most striking things to emerge from these tables is that the consecutive years 1956 and 1957 have total occurrence periods of 58 and 55 days respectively—or *about 8 weeks each*, while 1955, '58 and '59 have total periods of 86, 91 and 80 days respectively—an average of about 86 days—or *just over 12 weeks*. Now if one allowed only one week each for the duration of ovum and pupa stages (it is probably longer), in the "8-week years" of 1956 and '57, this would leave but 6 weeks for development of the larva stage in a full cycle—which seems rather short. The 12 week average period of the years 1955, '58 and '59 allows a more reasonable length of time for larval development (about 10 weeks on the same basis), and comes a little closer to the "April-August" approximation of Fig. 2 in the former paper. In other words, there is evidence to suggest that a second brood may have occurred in the three years 1955, 1958 and 1959, but not in 1956 or 1957.

It will be noted that most of the intervals between dates are short, and the broods if more than one, are not very well defined, but it must also be remembered that these dates are of recorded captures only, and not necessarily dates of the eclosion of any of the individuals. Also the figures represent only a proportion of the total extant in the area: some of the visitors may have come from afar: others locally bred may have dispersed further afield each sunny day, (being not infrequently diurnally active), with little or no call for retrogression on the light-trap's account if moonlit nights occurred in between.

Despite the "slurring" of the dates, there is some slight indication of further evidence in support of the idea of a second brood. It will be noticed that records ceased to occur towards the end of July in 1956 and 1957, with no very long intervals about this time, while in 1955 and 1958 there are some rather longer intervals about the end of July and during August. This is not quite so clearly indicated in 1959, although there are gaps of 6 days and 10 days in early and late July (separated by one record), and of a further 9 days just before the last record of 7th August: the season started earlier that year though, and the records are remarkable in both their quantity and even spread, but the summer of 1959 was altogether remarkable for Britain.

Of the general spread of records over the first part of any year in this district, it seems probable that those occurring in late May and early June may be the products of winter pupae, while those occurring in late June and early July may be the products of the winter larvae in those years *when there is to be a second brood*, the second brood probably appearing (as suggested by the intervals mentioned) in late July and August, and lasting perhaps till early September. *In those*

years when no second brood is to appear, no doubt due to environmental conditions, emergence of the products of the winter larvae is probably extended until late July, through the same set of environmental conditions.

The question still arises as to how the species copes with winter in the north if single brooded two years running, as it apparently was in 1956 and 1957. This is referable to the first question. One can only recall that diapause, though inherited, can have its onset initiated, or its duration extended (or reduced) by environmental factors, and it is possible that members of a brood may spend two winters as pupae, or possibly even as larvae. (This is not uncommonly observed with some species in captivity: some species seem more prone to this than others: it is interesting to recall Dr. Wigglesworth's citation of an extreme case where "pupae of the moth *Biston* have been known to pass through seven winters before resuming their development").

To sum up on the evidence suggested by Dr. Williams' records, it seems probable:

1. That the southern cyclic system tends to persist as far north as lat.  $57^{\circ} 8'$  approx. (Kincaig):
2. That suppression of a second emergence may however occur in some years:
3. That excessive heat or dryness, or both, may retard development of the early stages (as in 1955), though not entirely suppress a second emergence.
4. That the species usually appears on the wing in late May or early June at this latitude, is represented by adults until late July, but also in August or until early September when there is a second brood. (See also paragraph before last).
5. That there is insufficient evidence for the existence of a separate wholly univoltine northern race.

Objection might conceivably be raised against the last point on the grounds that the existence of a part-bivoltine cycle in the area could mask the presence of a univoltine race, and that Kincaig might lie on the boundary of both races. This seems unlikely. Barrett, after alluding to "no appearance of double-broodedness in its more northern range", adds later that "so far as is known, it has not been taken further north than Moray and the Hebrides". Well, the southern edge of Moray is barely 13 miles north of Kincaig (in the latitudinal sense), and Moray's northern-most point is little more than 29 miles further north of this. So Barrett's observation could not have referred to any mainland latitude much more than 42 miles (less than half a degree), further north of Kincaig, if as much, and as the southern cycle appears to persist as far north as the evidence seems to suggest, it probably does so further north still, though possibly suppression of the second brood may become more frequent by way of adaption to environment. In further support of the tendency of the southern cycle to persist in the north is the relatively small shift forwards of the mean average first emergence date—about 11 days—for a coverage of something like  $5^{\circ} 19'$  of latitude (from Harpenden, Herts., in the South Midlands—see later)—which works out at about

1 day per 29' of latitude, though the mean average emergence dates are calculated from a relatively small number of years. First emergences for the five years at Kincaig lay between 20 May and 13 June, and the mean average date is June 1st.

Barrett mentions occurrence of the species in the Hebrides, though he did not say which Hebrides. It is interesting to recall in passing, Dr. Heslop Harrison's<sup>4</sup> remarking in 1949 that the species was "far from rare in the Stornoway woods" (about lat. 58° 14' N. and 34 miles further north than northernmost Moray). So perhaps it may exist on the mainland in Sutherland and extend into southern Caithness, though the most northerly part of that county (and of Scotland) lies some 93 miles further north than Stornoway at about lat. 58° 40' N. Barrett's records though were quite unaided by the m.v. lamp which has quickly revealed many facts besides extent of range in recent years.

The April emergence of the species (cited by Bree) seems confined to the south of England. C. J. Goodall's m.v. trap report<sup>5</sup> for 1959 at Morecambe (a little more than 54° N.), says: "May 13th\* to early September; late appearance. Numerous." At Rothamsted (about lat. 51° 49' in Herts.), Dr. C. B. Williams' light trap results for four years included between 1933 and 1937, were analysed by him in a paper<sup>6</sup> published in 1939. (In Fig. 4, "Dates of occurrence in each of the four years of 30 species of Lepidoptera", the comparison of occurrences is most interesting, and in some species definition between broods is sharp, and in others less clear. *S. menthastri*, *O. luteolata* and *P. forficaris* are respectively the 3rd, 4th, and 5th species down the table of results and, referring to these results, Dr. C. B. Williams commented in the text: "*S. menthastri* is single brooded: *O. luteolata* is rather indefinitely, and *P. forficaris* quite definitely double brooded".) In Fig. 5, "Mean dates of first appearance and departures from the normal in each year of various species of Lepidoptera", it is seen that the Mean Date of First Appearance for *O. luteolata* in this district over the period given was 21st May. In the last two years in the Oxford district the species was recorded on 12th May in 1959, and 11th May in 1960, when single male specimens were noted at ordinary electric light, but many years recording are probably required to give a closer mean average. (It might be added that Dr. Williams' trap, 1933-37, employed a 200 Watt bulb). The Oxford district is not much different in latitude from Harpenden (Rothamsted), and not so very far west, but it is west, and has a very different local climate from that of Harpenden. Dr. Williams (in the paper mentioned above), refers to the small number of aquatic insects that came to his trap there, and remarked on the marked absence of running water in that district. Oxford, caught between the Chilterns in the east and the Cotswolds in the west, is surrounded by country riddled with rivers, has much of its land comprised of water-retaining clays, and the rainfall is not low: the climate is generally considered as approximating rather more to that experienced in the west, though retaining some of the features more appropriate to the east. This has been mentioned, because further west, at about these latitudes, the climatic changes encountered may

\*May 13th was possibly a rather early date for Morecambe? In the same year at Kincaig, 1959, the species first appeared on May 20th, the earliest date through the five-year period for the region.

exert a far more profound effect than that produced by a drop in latitude of equivalent mileage. Thus, A. H. Turner<sup>7</sup>, writing from Birkenhall, Somerset (*about 51°*) in 1952, described the occurrence of the species at m.v. locally on 25th April as "about average". G. Haggett<sup>8</sup>, however, writing in *The Entomologist* in 1949 about the previous year's Lepidoptera in West Sussex, evinced some surprise at seeing this species on the wing in April.

Finally, again acknowledging his indebtedness to Dr. Williams for making his records so readily available, the writer accepts, as indeed he must, sole responsibility for any constructions he may have tentatively placed on them. "Tentatively" is the keynote, for suggested interpretation from any medium in the absence of sharp definition is always liable to possible error. With such a species as *O. luteolata*, certain knowledge of the brood-mechanism in particular is only possible from breeding known stock under known conditions, as stated earlier.

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## Some Comments on *Opisthograptis luteolata* L., (Lep.) in its Southern Cycle, with Special Reference to the Ottershaw (Surrey) Records, and A Comparison with the Kinraig (Inverness-shire) Records for the Northern Cycle

By P. A. DESMOND LANKTREE, F.R.E.S.

### 1. A general discussion of differences in cyclic interpretations.

Receipt of the last paper, in which an analysis of Dr. C. B. Williams' Kinraig records was attempted by the writer, was acknowledged by the Editor on 4th April—too late for publication in that month's issue. In the meantime, however, Mr. R. F. Bretherton published in April<sup>1</sup> some very fine records of the species in its southern cycle together with an attempted analysis of his own records.

Our respective analyses were independently attempted on records obtained some 5° 22' apart in latitude (let alone any biotopic differences), and it is the object of this paper to refer to and discuss some of the differences in interpretation that have occurred.

These differences appear to be due in large part to a difference in approach on one point especially, and that is, while Mr. Bretherton has maintained some independence of Bree's statements about the cycle, the present writer has accepted them in essence and endeavoured to apply them as closely as possible to the Scottish figures made available to him by Dr. Williams.

Mr. Bretherton says the easiest explanation of the Ottershaw records seems to him to be that there are two streams. To quote: "the first, and in most years considerably the stronger, is bivoltine, the mean dates being from about 10th May to about 8th June, and from 8th August to 8th September. The second, and weaker, is mainly univoltine, usually from about 16th June to 21st July; but the beginning of it probably, in suitable weather conditions, overlaps with the end of the first brood of the bivoltine stream. Occasional cross-pairings at this point . . . probably account for the few late September and October stragglers". Now up to this point, all that he has said and that is quoted here, may be considered to be broadly represented by any of the three late spring to early autumn periods shown in Fig. 2<sup>2</sup>: that is, two streams, one univoltine, one bivoltine, giving three emergence periods in the year (interpreting the dates broadly), and the overlapping flight periods, probable cross-pairings and their (queried) results are alluded to in the relevant text of that paper and the one after.

Beyond this, however, resemblance between Mr. Bretherton's interpretation of his own records and the artificially contrived Fig. 2 referred to above almost terminates. Some deviation from Fig. 2 is most reasonable, for indeed it was only constructed in the first place to demonstrate how Fig. 1 (illustrating Bree's observations) could be completed into a workable cycle (by applying Barrett's remarks), and it was at the time suggested that, while Fig. 1 might be adopted as contributory to a fuller explanation of the cycle, Fig. 2 and its manner of derivation might be borne in mind. The latter figure was, moreover, afforded considerable plasticity or mobility when tentatively applied by the present writer to the Kincaid figures in his attempt to account for bivoltinism in two successive years and univoltinism in two other successive years in his previous paper, but it was none the less adhered to in principle, particularly with reference to the hibernation states and their products, as these are dependent on Bree's observations.

After that part of his explanation quoted above, Mr. Bretherton adds: "Members of the bivoltine stream in my view certainly hibernate as pupae". While the present writer accords every respect to Mr. Bretherton's personal opinion on this matter, he would point out that it is somewhat divergent from Bree's statement of the case. Certainly Bree's "April" moths (these dates will be referred to later) would seem to be the main source of a second brood, and certainly Bree states the "April" moths come from winter pupae—in this much there is agreement. Bree also states, however, that "the June brood is not the produce of the April moths, but of those of the preceding August, which pass the winter in the *larva* state (Bree's or Barrett's italics), and feed again in the spring". Thus, according to Bree, the August moths give rise to hibernating larvae, which is not consistent with Mr. Bretherton's view of a separate bivoltine stream whose members hibernate as pupae.

Mr. Bretherton's univoltine stream, the adult emergence of which he places between the 16th June and the 21st July, would correspond to the univoltine stream with a June emergence shown in Fig. 2, and while he states the hibernation phase of this stream "remains to be determined", he adds that his "figures are perfectly consistent with a slow development involving hibernation in the larval state". The present writer would suggest, though, that his figures would not appear to be any the less consistent with hibernation in the pupal state, as shown in Fig. 2 and Fig. 1, which of course would concur with Bree's statement that "those . . . from the June brood become pupae in the autumn, and produce moths in April". Furthermore, the products of Bree's "August" moths (i.e. second brood), have less time in which to reach the pupal state before the onset of winter than those of his "June" moths, which rather lends itself in support of Bree's observation.

At the close of his paper, while alluding to Bree's "April" moths, Mr. Bretherton said: "it is possible that Bree's reference may have been to bred specimens". The present writer would go much further and say that it is very highly probable indeed. So definite and precise in fact are Bree's statements concerning the cyclic system that (short of considering dreams, revelations, wishful-thinking, etc.) it is difficult to imagine that they are not the products of direct observation, and even more difficult to see how he could have arrived at them without breeding, which is why the present writer has laid so much store by them. To accept them though, is also to impose certain limitations on interpretation of the cycle from anything but further breeding results.

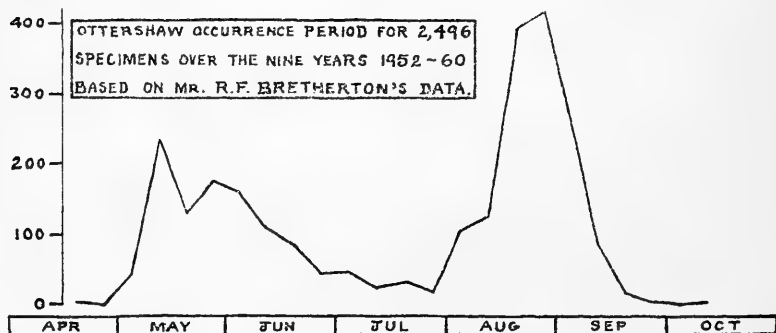
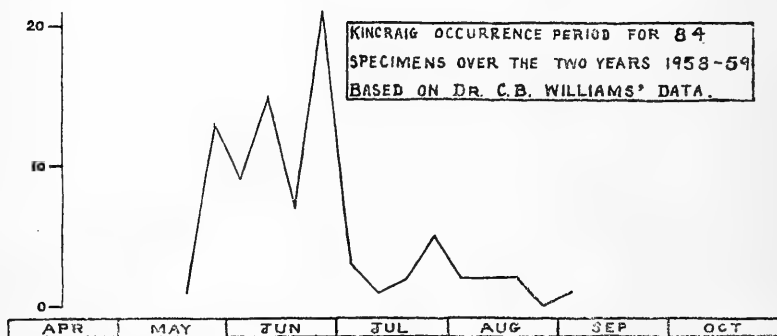
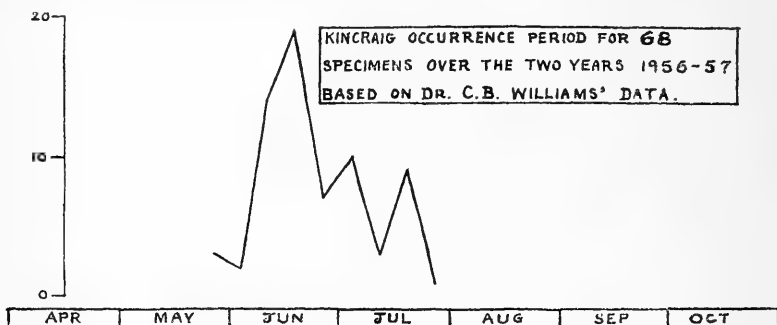
While stressing the apparent importance of accepting Bree's statements (*Ent. Rec.*, 73: 36-37 and Fig. 1) the writer would also recall his own suggested reasons for caution in such acceptance, that is, to the extent of treating them as contributory to, but not necessarily a complete explanation of the whole cycle. This, especially for the reason stated (*loc. cit.*, p. 39), that "it is not known on how many progeny, from the total number possible from a single parent female, Bree based his observations".

Thus, while Mr. Bretherton's view that the second generation of the bivoltine cycle overwinters as pupae is not in accord with Bree's statement of the case, it is not yet known whether Bree's statement covers the case of hibernation for the whole of Gen. II, and Mr. Bretherton's opinion on the matter is interesting, and may yet be shown to be partly true.

With regard to Mr. Bretherton's remarks on the existence of univoltine and bivoltine conditions within the same species, the writer is fully aware of many different and varied instances, though he has mentioned but a few. The mechanism of *luteolata's* broods (with which species these papers have been principally concerned), is as yet imperfectly understood in itself however, and is moreover distinguished from some in that overwintering is accomplished in two separate phases. Just how widely precisely the same system is applicable to other species we may come to know when the workings of the present one are better understood.

So far the species seems to be euryplastic and part-bivoltine with a dual hibernation phase throughout the greater part of its widely continuous range in Britain. Thus, as mentioned in the last paper, it appears that, rather than exhibit clinal tendencies towards a separate univoltine northern race, the southern cyclic conditions tend to persist in the northern latitudes when environmental conditions permit, but adaption may be afforded when they do not by suppression of the second brood, though the precise manner in which this may be effected has not yet been ascertained.

2. The graphs in general.



Annual light-occurrence periods for *O. luteolata* L. over several years at Kincaig (approx. lat. 57° 8' N.), Inverness-shire and at Ottershaw (approx. lat. 51° 22' N), Surrey.



The Ottershaw records which Mr. Bretherton has secured and published on *luteolata* in its southern cycle are most pleasingly substantial, and he is to be congratulated on their completeness and continuity.

As the Kincaig figures of the northern cycle are also now available, some graphical comparison, in so far as this is possible, has been attempted in the present paper.

In the Ottershaw graph, the approximately equal four parts of each month that Mr. Bretherton has himself employed have been plotted against their respective totals of recorded specimens.

In the Kincaig graphs, precisely the same time scale has been used, though due to the much lower totals the scales of the vertical axes have had to be increased. 1955 was omitted as incomplete and not very well represented numerically. 1956 and '57 were separately plotted as apparently carrying no evidence of a second brood.

### 3. Comments on the Ottershaw graph and records for 1952-60.

The double-humping of the first part of the graph is not purely fortuitous. To a greater or lesser degree the tendency is discernible in the figures for six of the nine years (1954 and 1956-60), though the humps may vary in their separation by some weeks. In the figures for 1952, '53 and '55, the double hump effect is probably obscured by confluence, though it may also happen that environmental shifting of emergence peaks in different seasons may tend to falsify the significance of totals over several years by appearing to add to different peaks, but these differences are largely minimised and ironed out over the full nine-year period.

The writer would certainly agree with Mr. Bretherton in that the first part of "the main burst of the May and early June emergence" probably represents insects which had hibernated as pupae: this also fits in with Bree's "April" emergence. On the other hand, the writer cannot bring himself to be convinced by Mr. Bretherton's suggestion alone that "there seems to be insufficient time in the spring before the main emergence to allow for feeding up of larvae and a full pupal stage". It is not known at what instar(s) the larvae hibernate, how long is still required for their full development, how soon they start feeding, or how long the spring pupal stage lasts. If they recommenced feeding in March on buds, young leaves and blossom, as available according to their varied foodplant, and continued some way into April, it would still seem at least possible for a short pupation period to be undergone to supply moths even from fairly early or mid-May in some springs, and more likely still a principal quantity in later May and early June. This would fit in with Bree's statement about the "June" emergence and could also well explain the bulky second hump, its initiation marking the occurrence of the winter larval products imposed on and overlapping with the winter pupal products. The gradual decline of the second hump could partly be accounted for by continued overlapping of later emergences from winter pupae, and partly perhaps by the possibility that some larvae may pass the winter in different instars and vary in their vernal development-completion time.

It is interesting to note that the addition of totals for the period from the first week in May to the last week in July (at which point the

trough is reached) comes to 1,091 specimens, while addition of the totals from the first week in August to the last week in September comes to 1,406 specimens, which is a sizeable increase. While the development of the second brood has many predatory dangers to survive for a shorter time, the development of the first brood has perhaps less predators to contend with, but for a much longer time, and under the variable, but sometimes great duress, provided by winter's long intrusion.

As to the times in the year which Bree gave for emergences, namely April, June and August, they have usefully served as generalisations for simplicity in reference due to their clear-cut separation. As Mr. Bretherton points out though, the Ottershaw records clearly demonstrate the rarity of the April emergence in this part of Britain, and the writer also agrees with him fully, as stated earlier, that Bree's dates are more than likely to have referred to breeding results. On the other hand, there is some evidence that an April emergence may be more usual in the West Country, as mentioned in the writer's previous paper. It might be added here that the mean average first date for the species in the Ottershaw area from Mr. Bretherton's figures is 7th May.

#### 4. *Comments on the Kincaig graphs for 1956-57 and 1958-59.*

The records from which these graphs were made have already been discussed at length in the previous paper.

The generally greater compression of the northern cycle due to a shorter season with a later start and earlier finish will be noted. The following time comparisons will emphasise it:—

<i>Ottershaw occurrence periods.</i>	<i>Years.</i>	<i>Kincaig occurrence periods.</i>
162 days	1952	—
138 days	1953	—
122 days	1954	—
133 days	1955	86 days
138 days	1956	58 days
157 days	1957	55 days
130 days	1958	91 days
131 days	1959	80 days
137 days	1960	—

The expansion and generally later start of the recorded flight-period when there is to be no second brood (1956-57), and considerable contraction and generally earlier start of the first flight-periods when there is (1958-59), was formerly discussed and is clear from the graphs.

Probably little inference can be fairly drawn from the triple-humping effect of the first flight period. In the first place, the population density of the species at Kincaig is evidently much lower than it is in more southerly latitudes, and graphic variation is consequently dependent on much smaller figures. Secondly, weather and moonlight conditions will influence emergence or flight and punctuate trap records. Thirdly, annual seasonal shifts can move the peaks. Fourthly, both graphs are each dependent on only two years of data—far too short a period to even out the other three factors. Over a much longer period of years, if the interpretation is correct, the triple-humping should resolve into a tendency for double-humping early in the year in

both types of graph, while the second brood might well show much better definition, though evidently quite unlikely to approach the dimensions of its southern counterpart.

Unfortunately, the most useful tool for interpretation of either the Kincaid or Ottershaw records is blatantly missing, for while summer duration periods of egg, larva and pupa stages remain unknown, no yardstick can be applied. It does not follow, in fact it is evidently most unlikely, that an "Ottershaw yardstick" could be effectively applied to the Kincaid records, or vice versa. Nor should it necessarily follow that the northern cycle is longer than the southern one for, say, reasons of lower average temperature. The difference in hours of daylight might influence larval feeding, as also the greater northern variation between night and day temperatures might influence length of pupal life in summer—such possible results are still undetermined.

Perhaps little real progress in analysis of the cycle can be gained from further discussion of the present evidence, and in any event breeding, as both Mr. Bretherton and the present writer have stated, would seem the only means of confirmation. If, though, the same cycle tends to persist throughout the species' continuous distribution on the British mainland, modified by its sensitivity to annual environmental change, outside of laboratory control, it would seem necessary to breed northern stock outdoors *in the north* for an accurate appraisal of the northern cycle, with similar analogies elsewhere.

#### 5. Imaginal size and Bree's June emergence.

Bree stated: "The specimens which appear in June are always larger and finer in colour and markings than those of the other two broods" Presuming the accuracy of his observations—why?

One possible reason that has occurred to the writer is dependent on the rest of Bree's observations concerning the June brood, and quite apart from its own interest in connection with imaginal size, it might be worth examining for the effects it may have on the cycle itself.

The rest of Bree's statement shows two relevant things (vide *Ent. Rec.*, 73: 36-38 and Figs. 1 and 2): firstly the June emergence in any one year is apparently representative of univoltinism, and secondly the June adults are, according to Bree, the products of winter larvae. Now it is known that the respective larvae of different broods of some species which may exhibit univoltinism and bivoltinism undergo a different number of ecdyses. *Leptidia sinapis* L. is a case in point. In its southern English distribution it is sometimes double brooded, and while the larvae of the first brood moult four times, those of the second moult only three<sup>3</sup>. Whether univoltine or bivoltine, the species is stated to pass the winter in the pupal stage, and if there is an average difference in imaginal size between broods, it does not appear to have elicited much comment in this species, and if occurring, it is probably not very great. However, as a possible cause of the greater size of the June imagines of *luteolata* noted by Bree, it might be worth investigating whether the overwintering larvae which give rise to them do in fact undergo one or more moults over and above the number undergone by larvae producing adults at any other time of the year.

It is the converse aspect of this case that might provide a clue to the difference in cyclic timing at different latitudes. Thus while Gen.

II larvae may undergo one less moult than those producing the June imagines in the southern cycle, it is not entirely impossible that Gen. II larvae in the northern cycle may even forgo a further moult to obtain the compression indicated by the relevant graph, or rather to assist in doing so, for this may not be the only contributory factor as mentioned earlier.

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## The Burnet Complex—A Reply

By W. G. TREMEWAN,

Department of Entomology, British Museum (Natural History)

As the title implies, this short note is written with a view to correcting the nomenclature on the *Zygaena* species discussed by Col. Duffield in his recent paper in the January number of the *Entomologist's Record* (Duffield, 1961).

Col. Duffield very kindly entertained me at his home, and I was able to examine the specimens he collected and see the localities where the specimens were captured.

First of all, it seems that not only Col. Duffield but many entomologists are still puzzled as to the status of the *Zygaena* known for many years as "*hippocrepidis* Stephens". Stephens (1828) misidentified a seasonal form of *filipendulae* L. which he called *hippocrepidis* Hübner. The latter is a distinct Continental species and has not been found in England. Later authors realised this, so the insect became known as "*hippocrepidis* Stephens". Dupont (1900) suggested the name *stephensi* for this early form of *filipendulae* and a year later Rebel (1901) proposed the name *tutti* which consequently is synonymous with *stephensi*.

Apparently collectors have difficulty in recognising *stephensi* Dupont. Stephens stated that it could be distinguished by the rather small sixth spot, which was divided by the nervule, and the rather broad, undulating border of the hindwing. The character of a small sixth spot being divided by the nervule has always been stressed by later writers with the result that most collectors have formed a false impression. It has also been considered that *stephensi* only occurs as a few examples of *filipendulae* which are found flying in June and are just a small portion of the brood the rest of which emerges later. In my opinion, *stephensi* is a seasonal form of *filipendulae* which for some unknown reason emerges in June and is well over by the time the normal populations begin to emerge, which is from July to August and only exceptionally at the end of June. Also it is the whole of the population of *stephensi* that emerges earlier and the normal July-August *filipendulae* are not found on the same ground later.

I have had experience with *stephensi* in only one locality which is on the North Downs near Guildford. Here it flies in company with the early subspecies of *trifolii* Esper which has been named by Verity ssp. *palustrella* Verity. In this locality *trifolii* ssp. *palustrella* begins

to emerge at the end of May and is almost over by the end of June. During the first week in June, *stephensi* begins to emerge and is over by the first or second week of July. By this time the normal *filipendulae* are just emerging in other localities.

As I have pointed out previously, the distinguishing characters are not great between *stephensi* and the July-August *filipendulae*. However, in the Guildford population of *stephensi*, the forewings of the males usually have a bluer ground colour and the hindwing borders are generally broader. Some of the females, however, are indistinguishable from normal *filipendulae*. Apart from these odd females just mentioned, the majority of the specimens are much smaller. I hope that this comparison and the notes given above will be of some use for determining *stephensi*. I might add that *stephensi* is usually found on chalk downs and in company with *trifolii* ssp. *palustrella* Verity, but it has also been found on limestone in Ireland where *trifolii* does not occur.

To return to the specimens taken by Col. Duffield, all the *filipendulae* that he has taken at Brook are f. *stephensi* Dupont. I must refute the statement (Duffield, 1961, p. 26) that *stephensi* (*hippocrepidis*) is a hybrid between *trifolii* and *filipendulae*. I have examined the genitalia of many specimens of *stephensi* and found them quite normal and conspecific with *filipendulae*. Hybrids do occur occasionally between *trifolii* and *filipendulae* and a specimen that I took in the Guildford locality is undoubtedly one. It is intermediate in genitalia, has a small sixth spot and a broad border to the hindwings. In other words, in superficial characters it resembles a specimen of *trifolii* which has a sixth spot.

In recent years the populations have unfortunately diminished at Brook, but observations made by Col. Duffield are exceedingly interesting. In 1959, he collected some of the cocoons which were spun high up on grass stems with the expectation of breeding out 'six spots' or *stephensi*. To his surprise, however, large five-spotted *Zygaena* emerged. These specimens he compared with *lonicerae* Scheven and they are in fact this species. It was thought that there were four distinct forms of *Zygaena* feeding on *Lotus corniculatus* L. on the hillside, and these were summarized in a table. As these determinations were not all accurate, I correct them as follows:—

1. The small five-spotted form emerging from pupae low down in the ground and hidden from view is *trifolii* ssp. *palustrella* Verity.
2. The large five-spotted form from cocoons high up on grass stems is *lonicerae* Scheven ssp. *transfersens* Verity.
- 3 and 4. The six-spotted forms are both *filipendulae* f. *stephensi* Dupont (*hippocrepidis* Hübner, Stephens *nec* Hübner).

Specimens from the population of *stephensi* at Brook are, on the whole, larger than specimens from Guildford. It will be noticed that two forms were thought to be flying at Brook and these were separated on the characters of broad or narrow hindwing borders and a sixth spot which was or was not divided by the nervule.

Regarding the damp marshy meadow, this is quite near to the hillside locality. On examining the specimens from the former area, I find that these are *filipendulae* f. *stephensi*, *lonicerae* (the latter is the large five-spotted form and according to Duffield is *palustris* Obthr.) and *trifolii* ssp. *palustrella*. The last-mentioned is not usually found

off chalky ground and I can only assume that the specimens are the progeny of a female that either strayed or was accidentally transported to the area by wind or some other factor. The latter may explain the occurrence of *stephensi* there.

I reproduce the table given by Col. Duffield, but with the appropriate corrections in the nomenclature placed in parenthesis.

	Hillside	Low-lying wet ground
True <i>trifolii</i> ( <i>trifolii</i> ssp. <i>palustrella</i> Verity) ...	21	12
Large five-spotted ( <i>lonicerae</i> ssp. <i>transferens</i> Verity) ... ..	19	14
<i>hippocrepids</i> , six-spotted ( <i>filipendulae</i> f. <i>stephensi</i> Dupont) ... ..	2	11
<i>filipendulae</i> , six-spotted ( <i>filipendulae</i> f. <i>stephensi</i> Dupont) ... ..	2	2

With the exception of one female, *lonicerae* was not seen on the ground until 1957. This I can confirm as I have seen all the specimens that were taken. I have had a similar and comparable experience at the Guildford locality. As my experience is analagous with that of Col. Duffield, perhaps it would not be without interest to compare it here.

In 1958, I discovered in the Guildford locality a flourishing colony of *trifolii* ssp. *palustrella*. There were also a few *filipendulae* f. *stephensi* flying with them. In that year I was only able to make one visit so my observations are limited. In 1959 I visited the area on several occasions from the beginning of June to early July. Again both species, viz. *trifolii* ssp. *palustrella* and *filipendulae* f. *stephensi* were abundant, and I took examples of each. On one visit towards the end of June, however, I saw at rest on a grass stem a large five-spotted *Zygaena* which I immediately recognised as *lonicerae* even before I had boxed it. The same day I collected some of the cocoons which were spun high up on grass stems and from these I bred *stephensi* and further specimens of *lonicerae*. The latter species was also observed and taken at later dates.

In 1960, my observations were continued and I again found *palustrella* and *stephensi*. I did not find any *lonicerae* but among the *trifolii* are three specimens which are as large as *lonicerae* and have characters of both species. These specimens may be hybrids, but unfortunately the differences in the genitalia between the two species are so small that good intermediate characters could not be found. From these observations I can only conclude that *lonicerae* and *trifolii* have interbred and merged in this locality. I am certain that the disappearance of *lonicerae* is not due to over-collecting, at least not on my part, as I only took three females and about a dozen males and the species was abundant in 1959.

It is well known that these two species are not sufficiently distinct to prevent them from interbreeding when contact is made. There exist only geographical and perhaps seasonal barriers which keep them distinct. By the time that *lonicerae* began to emerge in 1959, *trifolii* was getting over, but it was possible for the males of the former to pair with late emerging females of the latter species. This does not explain, however, why "pure" *lonicerae* were not seen in 1959.

It seems that the same phenomenon that took place in the Guildford area has also occurred at Brook. I look forward to reading Col. Duffield's observations for the coming season. Col. Duffield asked me from where did the *loniceræ* originate. This I cannot answer, but can only assume that they came from some near or distant colony. It seems that *loniceræ* has become more abundant and has increased its range in recent years. This is supported by the fact that many records sent to me for a future paper on the distribution of the British *Zygaena* species are from localities where the species is not known to have previously occurred. The majority of such records refer to southern England, and from this area very few records are found in the early literature. It has also been pointed out by several collectors that *loniceræ* has been found in certain localities for the first time. It is interesting to note that the same conclusions have been made quite independantly by J. M. Chalmers-Hunt (*in lit.*).

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## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

**Argyroplöce lacunana Dup.** When I was collecting on Tresco in June 1958 I noticed a number of a tortricid which I took to be *A. urticana* Hubn. of a rather small race. The ground colour of the insects was reddish, as is often the case with *urticana*, and as I have many of this colour, I only set a couple for the sake of the locality. When, however, I informed Mr. R. Mere of my captures on Tresco he wrote to me that *urticana* had never been found in the Scillies, so I carefully examined my two specimens and found they were certainly not that species. I therefore took them to the B.M., where Mr. Bradley, Dr. Obratsov (who was there on a visit) and myself put in most of a morning comparing them with insects in the collection without results.

With my permission, Mr. Bradley then dissected them both and found that they were *lacunana*; once their identity had been established the markings could be traced easily enough.

I intended to examine the Scilly *lacunana* thoroughly in 1959, but owing to the drought and heat wave the moth was over when I arrived in late June. However, in 1960 there were a good many about at that time and I succeeded in taking a series; the moth does not swarm on the Scillies as it does in certain parts of England. I found that the *lacunana* of the Scillies varies in ground colour from a pale golden drab to reddish drab; I did not see any of the light greenish drab characteristic of the species. Occasionally a worn insect approaches in colour to the typical, but I saw no fresh ones of this kind. So far as I could see all the Scilly *lacunana* are of this kind; I certainly found no other on Tresco, St. Marys, St. Helens, and Tean, though I did not do a great deal of collecting on any island but Tresco. I think

therefore that the Scilly *lacunana* is a good subspecies and merits a description.

*Argyroploce lacunana* Dup., ssp. *scilloneana* ssp. nov. Ground colour of forewings pale golden drab sometimes darkening to reddish drab.

Type: Tresco, 22nd June 1960 in coll. H. C. Huggins.

The aberration *herbana* Guen. in which the forewings are black except for the few metallic spots, occurred also amongst the Tresco population of *lacunana* and is rather commoner there than anywhere else I have worked excepting the Norfolk broads, where it is found at Ranworth and Horning in an unusually high ratio to the type form. There is also a strong tendency in the Scilly race to produce forms with the dark markings confluent, a tendency I have not noted elsewhere.

On 1st August 1922 I netted at Horning a male *lacunana* described beneath, which in wing pattern almost exactly resembles *A. metallicana* Hubn., as Sheldon, to whom I showed it in the autumn, pointed out. As at present it appears to be nondescript, I am calling it *Argyroploce lacunana* Dup. ab. *umbrosana* ab. nov.: Forewings dull greenish grey, with a blackish suffusion in the median and basal areas.

Type: male, Horning, Norfolk, 1.viii.1922, in coll. H. C. Huggins.

***Pyrausta perlucidalis* Hubn.** This moth in the ordinary way is on the wing in the second and third weeks of June, lasting till the beginning of July. As it seems probable from the capture of specimens last year in Suffolk, Essex and Kent that there was a widespread immigration to this country last summer, it is hoped that those who are working on damp localities in the south and east coasts will keep a sharp eye open for it, in case colonies have been established. As I have mentioned before, it looks in life like a very small specimen of *Notarcha ruralis* Scop. except for the conspicuous spot on the forewings. In size it resembles *Microstega pandalis* Hubn., but apart from the spot it is a much more transparent insect. In suitable weather *perlucidalis* may be disturbed from the undergrowth by day, especially at dusk; it also comes to mercury vapour light like most of the group.

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## The Larval Taxonomy of the British Trichoptera

By ALLAN BRINDLE, F.R.E.S.

### I. A KEY TO FAMILIES, WITH A REVIEW OF RECENT LITERATURE

For the identification of larvae of the British Trichoptera reference has had to be made to one of two Continental works, that of Lestage (1921) in French, or to that of Ulmer (1909) in German, in which keys to the known larvae are given. Both works include the majority of the British species and the taxonomic characters are often satisfactory, but, apart from their present relative inaccessibility, they have one main fault—the small size of the drawings illustrating the keys and the diagrammatic character of the drawings.

This fault has been remedied to a great extent in recent years by Hickin (1942-58) who has published a series of larval descriptions of



British material which are accompanied by large excellent drawings of relevant parts of the larvae concerned. This series now covers 52 of the British species and it is to be hoped that more will follow. Other larval descriptions, based on the standard set by Hickin, are to be found in McDonald (1950), Philipson (1953), Hanna (1956-61) and Brindle (1960). Keys to three families have also been published: to the Rhyacophilidae by Mackereth (1954-6), to the Beraeidae by Hickin (1959) and to the known larvae of the Philopotamidae by Brindle (1960).

In order to use this recent literature on the larvae of the British Trichoptera satisfactorily, however, it is essential that more modern keys should be published. It is not yet possible to key out all the British larvae since a number are unknown, and certain characters used in Lestage and Ulmer appear to be variable and need replacement by more constant characters. This applies chiefly to the genus *Limnephilus*. It is, nevertheless, possible to determine many larvae with the modern descriptions referred to previously providing that at least a key to families is available. The only modern family key published is that of Hickin (1946) which is not quite complete. In this key the character initially used for separating the larvae is the degree of sclerotisation of the thoracic nota. In Lestage and Ulmer the initial character is the division into the eruciform and the campodeiform larvae. Both of these initial divisions present difficulties in some species, since the degree of sclerotisation of the thoracic nota can be readily misinterpreted, and the distinction between an eruciform and a campodeiform larva is sometimes slight. It would seem that the best course would be to use as many obvious biological features, such as the type of case or nets of the larvae whenever these are reliable, as main characters, using additional less easily appreciated characters as secondary features. In this way the identification of the larvae could be attempted by students or by entomologists not specialising in this order.

#### GENERAL FEATURES OF THE CADDIS LARVAE

Only the more obvious features, particularly those connected with the key, are mentioned. For further details reference should be made to the publications listed in the bibliography.

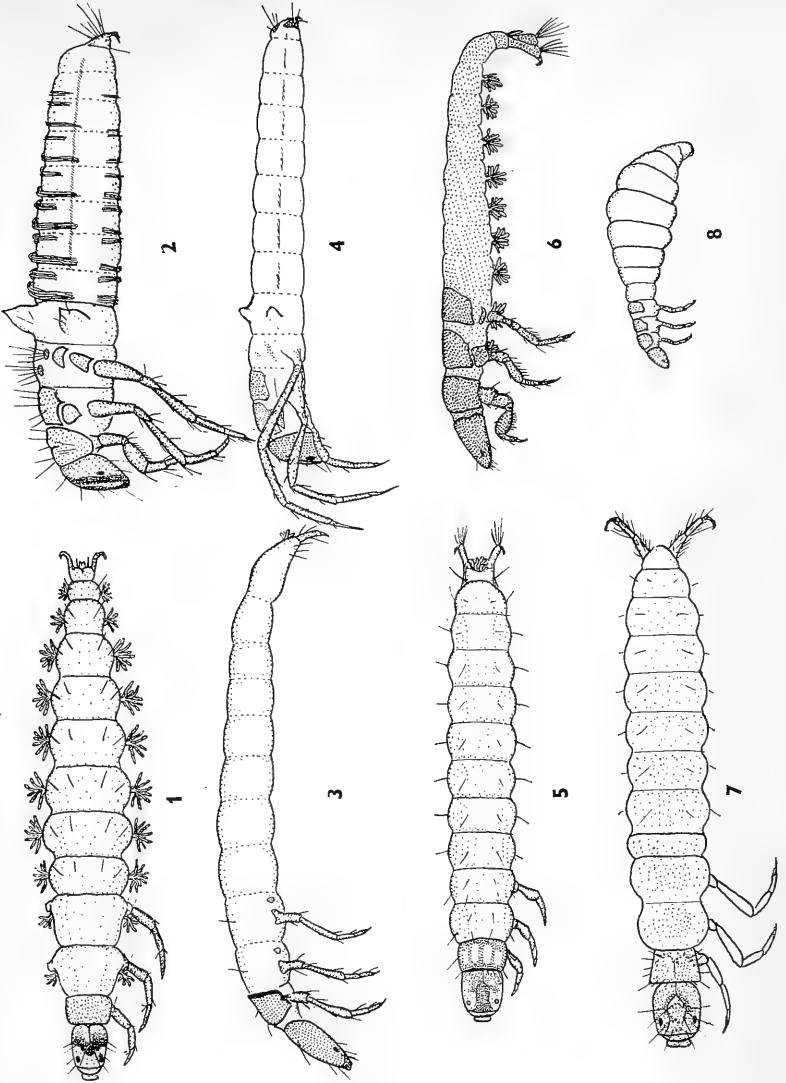
There are two main types of caddis larvae—the eruciform and the campodeiform, the general distinctions which are described below:—

*Eruciform*: These are the typical case-making larvae (figs. 2, 4, 23) with a soft whitish thick abdomen protected by the case. The head is hypognathous, i.e. the long axis of the head is vertical, with the mouth ventral; the first segment of the abdomen is often provided with lateral and dorsal fleshy lobes, and the intersegmental constrictions of the abdomen are not well marked. There is a "lateral line" along the abdomen, which is seen as a furrow, often with very short setae, and in most cases whitish filiform gills occur on some or most segments. These may be single, double, or rarely much branched. The abdomen ends in a pair of very short anal appendages which possess a distal hook. The larva is thus held in position in the case by the anal hooks and by the lateral and dorsal lobes which presumably hold the body more or less centrally in the case. Normally, in feeding, only the head and thoracic segments of the larva are exposed.

The anterior legs are broader and much shorter than the posterior pairs and all legs end in a claw. In some families a more or less sclerotised projection occurs between the front coxae (fig. 36); this is the prosternal horn. The larvae of the Phrygaenidae (fig. 23) are usually termed sub-eruciform since they exhibit certain features which are transitional between the eruciform and campodeiform type of larva. Eruciform larvae are the rule in the Limnephilidae, Sericostomatidae, Beraeidae, Molannidae, Odontoceridae, and the Leptoceridae, all of which construct a transportable case.

*Campodeiform*: These are the typical free-living, net-spinning, or tube-making caddis, not constructing a case until pupation. The Hydropsilidae construct a case when in the later larval stages but are apparently free living when young. This type of larva has a rather depressed, often coloured, abdomen, which is usually obviously less soft than the abdomen of the eruciform larva. The head is prognathous, i.e. the long axis of the head is horizontal, with the mouth anterior; the first segment of the abdomen bears no fleshy lobes and the intersegmental constrictions are usually well-marked and often deep (figs. 1, 3, 5, 6, 7, 8). There is no lateral line. Abdominal gills are not commonly found but when they occur they are much branched and either lateral or ventral in position. The anal appendages are generally long, the distal hooks affording a grip on the silk of the tunnel or net. The anterior legs are often not greatly shorter than the posterior ones. The campodeiform larva is the rule in the Polycentropidae, Psychomyiidae, Philopotamidae, Rhyacophilidae, Hydropsychidae, and Hydropsilidae, only the latter having a case in the larval stage.

*General*: With one exception (*Enoicyla pusilla* (Burm.) which has a terrestrial larva with an open tracheal system) all caddis larvae are completely aquatic with a closed tracheal system and often possessing whitish tracheal gills. The gills are arranged along the abdomen either laterally, dorsally, or occasionally ventrally. There is evidence that the oxygen intake of the larvae is not confined to the gills but is also absorbed through the cuticle, and this explains the curious distribution of the gills. In the Limnephilidae there is some correlation between the oxygen content of the water and the number of gills, i.e. the lotic water species usually have single gills, and the static water species double gills. In the campodeiform larvae, however, Rhyacophila (fig. 1) and Hydropsyche (fig. 6) have much branched gills even though they live in rapid flowing water alongside such larvae as Polycentropus (fig. 7) and Philopotamus (fig. 3) which have no gills. Whitish so-called "anal gills", immediately anterior and dorsal to the anal appendages, may also occur. The head is well sclerotised, and the median triangular shaped sclerite is referred to as the fronto-clypeus. The prothorax is always sclerotised dorsally, the meso- and meta-thorax may be membranous and coloured as the abdomen, or be partially or entirely sclerotised, the degree of sclerotisation usually being conspicuous by reason of the darker colour. The thoracic tergites are referred to as the pro-, meso-, and meta-nota. The antennae are generally short and inconspicuous, but long and obvious in the Leptoceridae. The mandibles are assymetrical, variable in form, often with a brush of setae on the internal edges (fig. 37) and two



Caddis larvae

Fig. 1, *Rhyacophila*, dorsal. 2, *Limnephilus*, lateral. 3, *Philopotamus*, lateral. 4, *Mystacides*, lateral. 5, *Tinodes*, dorsal. 6, *Hydropsyche*, lateral. 7, *Polycentropus*, dorsal. 8, *Hydroptila*, lateral.

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setae on the external edges. In some species this setal brush is absent from one or both mandibles. The eyes are prominent, placed anteriorly in the more carnivorous larvae and more laterally and posteriorly in the more herbivorous larvae. The food may be either plant or animal material, to a large extent being indicated by the shape of the mandibles, the broader mandibles with a broad serrated tip (fig. 37) being typical of the herbivorous caddis, and the narrower mandibles with a sharp tip (fig. 22) being typical of the carnivorous caddis.

*Cases:* These may be of vegetable or mineral material, or more rarely of secretion only. A few species also tend to use the shells of snails. If the mineral particles chosen are comparatively large (fig. 9) a rough case results. Smaller particles result in a smoother case (figs. 12, 15). Some species of *Athripsodes* utilise very fine particles and produce a very smooth case (fig. 16). Vegetable material may be arranged longitudinally, either imbricated and overlapping or of uniformly cut pieces arranged circularly or spirally (fig. 13). In some *Limnephilus* the plant material is placed transversely, resulting in a very rough case (fig. 19). *Glyphotaelius* (Limnephilidae) places large pieces of leaf dorsally and ventrally on the central tube (fig. 17). Additional materials, such as long pieces of twig, are often added to the case in such genera as *Mystacides*, *Anabolia*, and *Stenophylax* (fig. 18). Whilst the cases are usually tubular in section, *Lepidostoma* and *Crunoecia* make cases of quadrangular section (fig. 20), and some Limnephilidae cases are triangular in section (fig. 21).

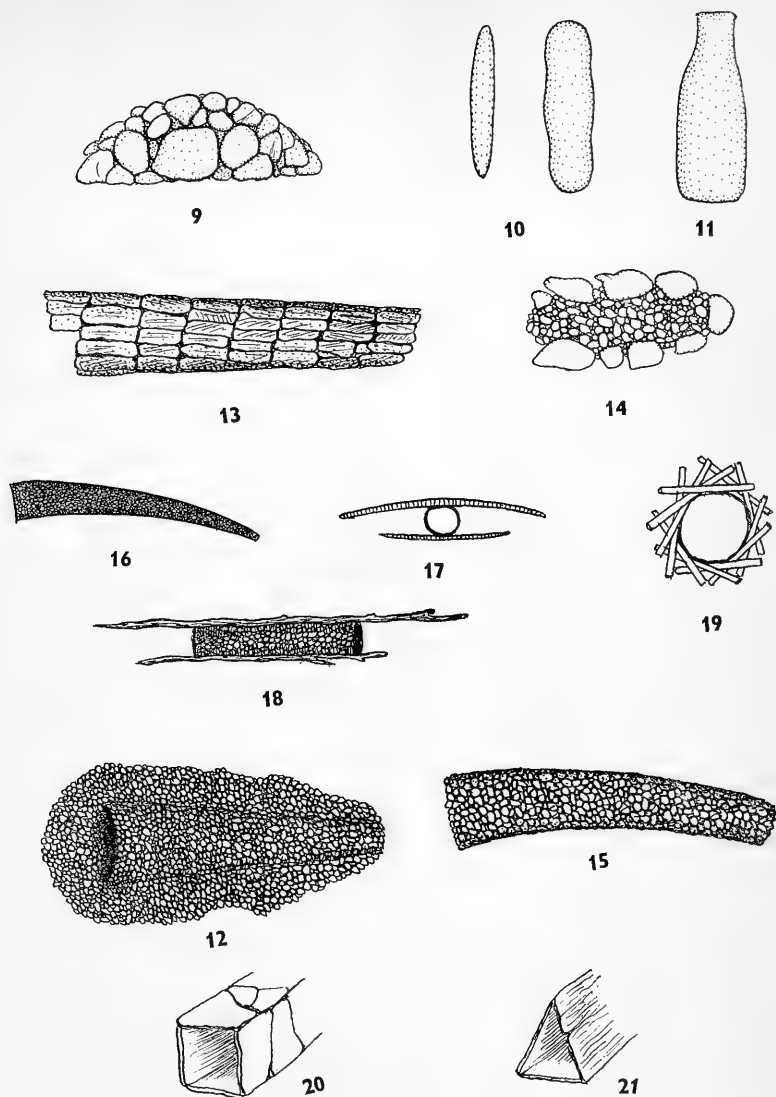
#### KEY TO FAMILIES

1. Larvae in a transportable case ..... 2
- Larvae without a transportable case ..... 13
2. Cases almost hemispherical (fig. 9), both openings on the flattened ventral surface; cases of comparatively large pieces of stone, rough, fastened to the upperside of stones in streams and rivers ..... *Rhyacophilidae* (Glossosomatinae)
- Cases not hemispherical ..... 3
3. Cases very small, of fine mineral particles, greatly flattened or flask-shaped (figs. 10, 11); larvae small, campodeiform, some segments of abdomen much wider than thorax (fig. 8); each thoracic nota with a single sclerotised plate; in static or lotic water ..... *Hydroptilidae*
- Cases not greatly flattened or flask-shaped; larvae usually larger, eruciform or suberuciform, no segments of abdomen wider than thorax; metanotum at least without a single sclerotised plate ..... 4
4. Cases shield shaped (fig. 12) composed of sand grains, and formed of a tube with lateral extensions; head with two dark bands (fig. 24); in static water ..... *Molannidae*
- Cases not shield shaped, but usually more or less tubular, less commonly of quadrangular or triangular section (cf. *Glyphotaelius*) ..... 5
5. Larvae sub-eruciform with only the pronotum sclerotised (fig. 23); cases of vegetable material tubular, hardly tapering posteriorly, open at both ends, typically composed of uniform lengths of material arranged spirally (fig. 13); sometimes a

hollow stem is used (*Agrypnia*) and the case of *Trichostegia* is not spirally made; in static or slowly moving water .....

*Phrygaenidae*

- Larvae eruciform with at least both pro- and meso-nota sclerotised (the latter slight in some Leptoceridae); cases variable but with one exception not spirally made. (Exception: *Trienodes*, in which the case is very thin, long, and tapers posteriorly) ..... 6
- 6. Pronotum produced at anterior corners (figs. 26, 28) ..... 7
- Pronotum not produced at anterior corners (figs. 30, 34) ... 8
- 7. Cases tubular or elliptical, of mineral particles, with larger pieces of stones arranged down either side (fig. 14); tibiae without spines on processes; pronotum with median longitudinal suture only (fig. 26); eyes lateral (fig. 25); in rivers and streams ..... *Sericostomatidae* (Goerinae)
- Cases tubular, of secretion only, anchored at the distal end; tibiae with spines on processes (fig. 27); pronotum with longitudinal and transverse sutures (fig. 28); eyes dorsal (fig. 29); in rivers ..... *Sericostomatidae* (Brachycentrinae)
- 8 Clypeus with distinct anchor-like mark (fig. 31); thoracic nota with sclerotised plates arranged as fig. 30; case of mineral particles, smooth, tubular, slightly curved (fig. 15); in rapid streams ..... *Odontoceridae*
- Clypeus otherwise; thoracic nota not with such an arrangement of plates ..... 9
- 9. Prosternal process present (fig. 36) ..... 10
- Prosternal process absent ..... 11
- 10. Cases quadrangular in section, at least partially (*Crunoecia*, *Lepidostoma*); if round in section (*Lasiocephala*) then mesonotum not with a complete sclerotised plate; in lotic water ..... *Sericostomatidae* (Lepidostomatinae)
- Cases variable, usually tubular, sometimes triangular in section, never quadrangular; mesonotum always with a complete sclerotised plate and metanotum typically with three pairs of small sclerotised plates (fig. 2); in lotic or static water ..... *Limnephilidae*
- 11. Head uniformly dark brown or blackish or with light spots (fig. 33); thoracic nota densely hairy (fig. 34); abdomen wide (as fig. 2) cylindrical, not tapering posteriorly, ninth segment almost as wide as eighth; cases of mineral particles as fig. 15; in rivers ..... *Sericostomatidae* (Sericostomatinae)
- Head lighter or with a distinct pattern; thoracic nota not densely hairy; abdomen cylindrical, narrower, tapering, ninth segment usually much narrower than eighth; cases of fine or coarse mineral particles, or vegetable material, or of secretion only ..... 12
- 12. Head either round and unicolorous reddish (fig. 35) or slightly elongated, black and yellow; antennae short, inconspicuous; right mandible with brush of setae on inner side; cases of fine mineral particles as fig. 16; in lotic or static water ... *Beraeidae*
- Head elongated, with or without distinct pattern (fig. 32); antennae long or very long, conspicuous; no brush of setae on



## Caddis cases

Fig. 9, *Agapetes*, lateral. 10, *Agraytea*, dorsal and lateral. 11, *Oxyethira*, dorsal. 12, *Molanna*, ventral. 13, *Phryganea*, lateral. 14, *Silo*, dorsal. 15, *Odontocerum*, lateral. 16, *Athripsodes*, lateral. 17, *Glyphotaelius*, transverse section. 18, *Anabolia*, lateral. 19, *Limnephilus*, trans. 20, *Lepidostoma*, anterior part. 21, *Limnephilus*, anterior part.





- right mandible; cases variable; in lotic or static water .....  
*Leptoceridae*
13. Larvae free living amongst stones in rapid streams and rivers;  
 lateral gill tufts on abdomen (fig. 1) .....  
*Rhyacophilidae (Rhyacophila)*
- Larvae not free living, but in nets or tubes; no lateral gill  
 tufts on abdomen ..... 14
14. Larvae in tubes or tunnels of silk, covered with mineral  
 particles or other debris, on submerged stones or wood; anal  
 appendages short; (only the pronotum sclerotised (fig. 5) ex-  
 cept *Ecnomus*); in lotic or static water ..... *Psychomyiidae*
- Larvae not in tubes or tunnels but in silken nets, anal appen-  
 dages long ..... 15
15. Larvae with ventral gills tufts (fig. 6); often dark coloured  
 and communal; in rapid streams ..... *Hydropsychidae*
- Larvae without gill tufts ventrally ..... 16
16. Labrum soft, whitish; head elongated, parallel-sided, uni-  
 colourous red or yellow; abdomen whitish or yellowish (fig. 3);  
 in lotic water ..... *Philopotamidae*
17. Labrum sclerotised, yellow or brown; head not elongated, more  
 rounded; yellowish or brown, often with darker spots or bands;  
 abdomen reddish, pink, yellowish, or greenish, etc., never white  
 (fig. 7); in lotic or static water ..... *Polycentropidae*

## CHECK LIST OF BRITISH TRICHOPTERA

(from Kloet and Hincks, 1945, amended by Kimmins, 1949 (a), 1949 (b),  
 1952, 1956, 1961)

All larvae recently described and figured in English publications have the appropriate reference. In order to reduce the bibliography. the series by Dr. N. E. Hickin is listed as one item, and page references are given below. All species having no comment in the list are included in the Keys in Lestage (1921), or in Ulmer (1909).

## PHRYGANEIDAE

The only larvae, having only the pronotum sclerotised, to make a tubular case. Whilst the typical form is spirally made, *T. minor* often makes a simple tubular one and *Agrypnia* may utilise a hollow stem.

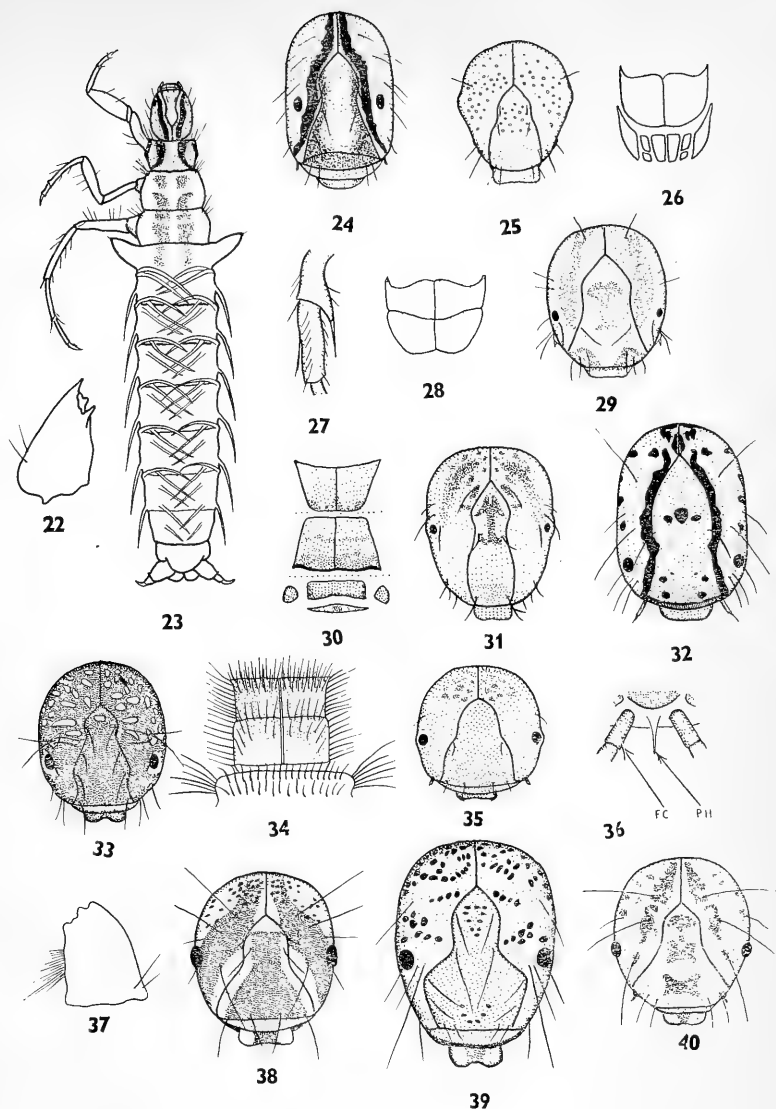
1. *Oligotricha ruficrus* (Scop.) Hickin, N. E., 1944, **19**: 9-12
2. *O. clathrata* (Kol.)
3. *Phryganea grandis* L. Hickin, N. E., 1942, **17**: 134-137
4. *P. striata* L. Hickin, N. E., 1955, **30**: 55-58
5. *P. varia* F. Hickin, N. E., 1953, **28**: 39-40
6. *P. obsoleta* Hagen Hickin, N. E., 1955, **30**: 55-58
7. *Trichostegia minor* (Curt.) Hickin, N. E., 1954, **29**: 174-176
8. *Agrypnètes crassicornis* McLach.
9. *Agrypnia picta* Kol.
10. *A. pagetana* Curt. Hanna, H. M., 1957 (a)

## LIMNEPHILIDAE

The most common larvae encountered. Cases extremely variable, usually tubular, of mineral or vegetable material, occasionally snail

shells are used. *Glyphotaelius* has a tubular case with large flat pieces of leaves dorsally and sometimes ventrally (fig. 17). *Anabolia nervosa* usually adds long pieces of stem or twig to the case, a habit which is shared with other species (fig. 18). Plant material may be arranged longitudinally (fig. 21) or transversely (fig. 19).

11. *Ironoquia dubia* (Steph.)
12. *Apatania wallengreni* (McLach.) larva unknown
13. *A. auricula* (Forssl.)
14. *A. muleibris* McLach.
15. *Drusus annulatus* Steph. Hanna, H. M., 1961
16. *Ecclisopteryx guttulata* (Pict.) Nielsen, A., 1942
17. *Limnephilus rhombicus* (L.) Hickin, N. E., 1948, **23**: 54-56
18. *L. flavicornis* (F.) Hickin, N. E., 1943, **18**: 6-10
19. *L. subcentralis* Br. larva unknown
20. *L. borealis* (Zett.)
21. *L. marmoratus* Curt. Hanna, H. M., 1956 (c)
22. *L. politus* McLach. Hanna, H. M., 1956 (b)
23. *L. stigma* Curt.
24. *L. xanthodes* McLach.
25. *L. decipiens* (Kol.)
26. *L. lunatus* Curt. Hickin, N. E., 1943, **18**: 66-68
27. *L. luridus* Curt.
28. *L. ignavus* McLach.
29. *L. fuscineris* (Zett.)
30. *L. elegans* Curt.
31. *L. griseus* (L.)
32. *L. bipunctatus* Curt.
33. *L. affinis* Curt.
34. *L. incisus* Curt.
35. *L. hirsutus* (Pict.) larva unknown
36. *L. centralis* Curt. Hickin, N. E., 1954, **29**: 96-98.
37. *L. sparsus* Curt.
38. *L. auricula* Curt.
39. *L. vittatus* (F.) Hickin, N. E., 1943, **18**: 72-74
40. *L. nigriceps* (Zett.)
41. *L. extricatus* McLach. Hickin, N. E., 1948, **23**: 12-13
42. *L. fuscicornis* Ramb.
43. *L. coenosus* Curt.
44. *Grammotaulius nitidus* (Muell.) larva unknown
45. *G. atomarius* (F.) Hickin, N. E., 1954, **29**: 89-92
46. *Glyphotaelius pellucidus* (Retz.) Hickin, N. E., 1946, **21**: 61-65
47. *Anabolia nervosa* (Curt.) Hickin, N. E., 1943: **18**: 11-14
48. *A. brevipennis* (Curt.)
49. *Rhadicoleptus alpestris* (Kol.) larva unknown
50. *Potamophylax latipennis* (Curt.) Hickin, N. E., 1954, **29**: 55-58
51. *P. stellatus* (Curt.) Hickin, N. E., 1942, **17**: 9-11
52. *P. rotundipennis* (Br.)
53. *Halesus radiatus* (Curt.) Hanna, H. M. (1960).
54. *H. digitatus* (Schr.) Hickin, N. E., 1949, **24**: 56-59
55. *Melampophylax mucoreus* (Hagen) larva unknown
56. *Enoicyla pusilla* (Burm.) Hickin, N. E., 1958, **33**: 176-178
57. *Stenophylax permistus* McLach. larva unknown



## Caddis larvae

Fig. 22, *Neuronia*, mandible. 23, *Neuronia*, larva, dorsal. 24, *Molanna*, head, anterior. 25, *Silo*, head, anterior. 26, *Silo*, sclerites of pro- and meso-nota. 27, *Brachycentrus*, tibia and tarsus, mesothoracic leg. 28, *Brachycentrus*, pronotum. 29, *Brachycentrus*, head, anterior. 30, *Odontocerum*, sclerites of pro-, meso- and meta-nota. 31, *Odontocerum*, head, anterior. 32, *Athripsodes*, head, anterior. 33, *Notidobia*, head, anterior. 34, *Notidobia*, thoracic nota. 35, *Beraea*, head, anterior. 36, *Limnephilus*, Prosternum, anterior. FC—front coxa, PH—prosternal horn. 37, *Limnephilus*, mandible. 38, *Limnephilus*, head, anterior. 39, *Hydratophyllax*, head, anterior. 40, *Anabolia*, head, anterior.



58. *S. vibex* (Curt.) Hickin, N. E., 1950, **25**: 107-110
59. *S. lateralis* (Steph.) Hickin, N. E., 1954, **29**: 145-146
60. *S. sequax* McLach. Hickin, N. E., 1953, **28**: 163-165
61. *Mesophylax impunctatus* McLach.
62. *M. aspersus* (Ramb.) larva unknown
63. *Allogamus auricollis* (Pict.)
64. *Hydatophylax infumatus* (McLach.) Hanna, H. M. (1957) (b)
65. *Chaetopteryx villosa* (F.) Hickin, N. E., 1948, **23**: 59-61

#### SERICOSTOMATIDAE

Four subfamilies, each having a distinctive case (except *Lasiocephala*) separated in the key. Only the case made by the Sericostomatinae resembles that of another family.

#### SERICOSTOMATINAE

66. *Sericostoma personatum* (Sp.) Hickin, N. E., 1951, **26**: 93-96
67. *Notidobia ciliaris* (L.) Hanna, H. M., 1956 (a)

#### GOERINAE

68. *Goera pilosa* (F.) Hickin, N. E., 1943, **18**: 75-77
69. *Silo pallipes* (F.) Hickin, N. E., 1942, **17**: 123-126
70. *S. nigricornis* (Pict.)

#### BRACHYCENTRINAE

71. *Brachycentrus subnubilus* Curt. Hickin, N. E., 1943, **18**: 81-83

#### LEPIDOSTOMATINAE

72. *Crunoecia irrorata* (Curt.) Hickin, N. E., 1954, **29**: 172-173
73. *Lepidostoma hirtum* (F.) Hickin, N. E., 1943, **18**: 15-17
74. *L. fimbriatum* (Pict.)
75. *Lasiocephala basalis* (Kol.)

#### BERAEIDAE

Cases similar to the typical *Athripsodes* case, of fine mineral particles, curved, tapering posteriorly. Hickin (1959) gives a key to all the species.

76. *Beraea pullata* (Curt.)
77. *B. maurus* (Curt.)
78. *Ernodes articularis* (Pict.)
79. *Beraeodes minuta* (L.)

#### MOLANNIDAE

The case is unmistakable (fig. 12) and the colouration of the head distinctive (fig. 24).

80. *Molanna angustata* Curt. Hickin, N. E., 1946, **21**: 55-60
81. *M. palpata* McLach. larva unknown

#### ODONTOCERIDAE

The pattern on the fronto clypeus (fig. 31) is distinctive, allied to the case (fig. 15).

82. *Odonticerum albicorne* (Scop.) Hickin, N. E., 1942, **17**: 119-122

#### LEPTOCERIDAE

Several types of cases (a) typical *Athripsodes* (fig. 16) smooth, curved,

tapered, of fine mineral particles (b) a more tubular one often adorned with pieces of twig, *Mystacides* (fig. 18) (c) the long, slender, spiral type of *Trienodes*, (d) the long, slender, case of secretion only of some *Setodes*. Other variations occur.

83. *Athripsodes nigronervosus* (Retz.) larva unknown
84. *A. fulvus* (Ramb.)
85. *A. senilis* (Burm.)
86. *A. alboguttatus* (Haegen) larva unknown
87. *A. annulicornis* (Steph.)
88. *A. aterrimus* (Steph.) Hickin, N. E., 1943. **18**: 106-108
89. *A. cinereus* (Curt.)
90. *A. albifrons* (L.) larva unknown
91. *A. interjectus* (McLach.)
92. *A. bilineatus* (L.) Hickin, N. E., 1953, **28**: 111-113
93. *A. commutatus* (McLach.) larva unknown
94. *A. dissimilis* (Steph.) larva unknown
95. *Mystacides nigra* (L.) Hickin, N. E., 1943, **18**: 69-71
96. *M. azurea* (L.) McDonald, W. W., 1950.
97. *M. longicornis* (L.) Hickin, N. E., 1953, **28**: 114-116
98. *Trienodes bicolor* (Curt.) Hickin, N. E., 1942, **17**: 12-13
99. *T. conspersa* (Ramb.) Hickin, N. E., 1954, **29**: 153-155
100. *Erotesis baltica* McLach.
101. *Adicella reducta* (McLach.) larva unknown
102. *A. filicornis* (Pict.)
103. *Oecetis ochracea* (Curt.)
104. *O. furva* (Ramb.)
105. *O. lacustris* (Pict.) Hanna, H. M., 1958
106. *O. notata* (Ramb.) larva unknown
107. *O. testacea* (Curt.) larva unknown
108. *Leptocerus tineiformis* (Curt.) Hickin, N. E., 1953. **18**: 74-76
109. *L. lusitanica* (McLach.) larva unknown
110. *L. interrupta* (F.)
111. *Setodes punctata* (F.) larva unknown
112. *S. argentipunctella* McLach. Hickin, N. E., 1943. **18**: 109-111

#### HYDROPSYCHIDAE

Easily recognised by their often dark colouring and by the ventral gill tufts. In silken nets under stones in lotic water.

113. *Hydropsyche pellucida* (Curt.)
114. *H. saxonica* McLach.
115. *H. angustipennis* (Curt.) Brindle, A., 1960 (d)
116. *H. contubernalis* McLach. larva unknown
117. *H. guttata* Pict. larva unknown
118. *H. instabilis* (Curt.) Philipson, G. N., 1953 (a)
119. *H. fulvipes* (Curt.) larva unknown
120. *H. exocellata* Duf. larva unknown
121. *Cheumatopsyche lepida* (Pict.)
122. *Diplectrona felix* McLach.

#### POLYCENTROPIDAE

Readily distinguished by their reddish or pinkish colour, etc., the absence of gills, and the long anal appendages. In lotic or static water, in nets.

123. *Neureclipsis bimaculata* (L.) Brindle, A., 1960 (b)
124. *Plectonemia conspersa* (Curt.) Hickin, N. E., 1947, **22**: 114-117
125. *P. geniculata* McLach. larva unknown
126. *P. brevis* McLach. larva unknown
127. *Polycentropus flavomaculatus* (Pict.) Hickin, N. E., 1952, **27**: 86-88
128. *P. multiguttatus* (Curt.) larva unknown
129. *P. kingi* McLach. larva unknown
130. *Holocentropus dubius* (Ramb.) Hickin, N. E., 1943, **18**: 19-21
131. *H. picicornis* (Steph.)
132. *H. stagnalis* (Alb.)
133. *Cyrrnus trimaculatus* (Curt.)
134. *C. flavidus* McLach. McDonald, W. W., 1950
135. *C. insolutus* McLach.

#### PSYCHOMYIIDAE

The only family whose larvae construct silken tunnels on submerged wood or stones, in lotic or static water. *Economus* is reported to be associated with fresh-water sponges and is the only species of the family to have a complete sclerotised plate on pro-, meso- and meta-nota.

136. *Economus tenellus* (Ramb.)
137. *Tinodes waeneri* (L.) Hickin, N. E., 1950, **25**: 67-70
138. *T. aureola* (Zett.)
139. *T. assimilis* McLach. Hickin, N. E., 1952, **27**: 89-90
140. *T. maculicornis* (Pict.) larva unknown
141. *T. unicolor* (Pict.) Hickin, N. E., 1953, **28**: 36-38
142. *T. rostocki* McLach.
143. *T. dives* (Pict.) larva unknown
144. *T. pallidula* McLach. Hickin, N. E., 1950, **25**: 103-106
145. *Lype phaeopa* (Steph.) Hickin, N. E., 1954, **29**: 93-95
146. *L. reducta* (Hagen) Hickin, N. E., 1950, **25**: 71-74
147. *Metatype fragilis* (Pict.) larva unknown
148. *Psychomyia pusilla* (F.) Brindle, A., 1960 (c)

#### PHILOPOTAMIDAE

The three known larvae are readily distinguishable from other caddis larvae. Brindle (1960) gives a key to the known larvae. In nets amongst stones in lotic water.

149. *Philopotamus montanus* (Don.) Hickin, N. E., 1942, **17**: 16-17
150. *Wormaldia occipitalis* (Pict.) Brindle, A. (1960) (a)
151. *W. subnigra* McLach. Philipson, G. N., 1953 (b)
152. *Chimarra marginata* (L.) Larva unknown

#### RHYACOPHILIDAE

Two subfamilies, Rhyacophilinae, with free living larvae readily distinguishable by the presence of lateral gill tufts, and Glossosomatinae (*Glossosoma*, *Agapetus*) whose larvae construct distinctive hemispherical cases. All in lotic water. Mackereth (1954-6) gives a key to all species.

153. *Rhyacophila dorsalis* (Curt.) Hickin, N. E., 1942, **17**: 14-16
154. *R. septentrionis* McLach.
155. *R. oblitterata* McLach.
156. *R. munda* McLach.
157. *Glossosoma boltoni* (Curt.)

158. *G. vernale* (Pict.)
159. *G. intermedia* (Klap.) Kimmins, D. E., 1943
160. *Agapetus fuscipes* Curt. Hickin, N. E., 1943, **18**: 78-80
161. *A. comatus* (Pict.)
162. *A. delicatulus* McLach.

#### HYDROPTILIDAE

Very little work has been done on the larvae; the cases are all very small and, as far as is known, of unusual shapes, either being greatly flattened or flask-shaped, etc.

163. *Agraylea multipunctata* Curt.
164. *A. pallidula* McLach.
165. *Allotrichia pallicornis* (Eat.) larva unknown
166. *Hydroptila sparsa* Curt.
167. *H. simulans* Mosely larva unknown
168. *H. lotensis* Mosely larva unknown
169. *H. cornuta* Mosely larva unknown
170. *H. angulata* Mosely larva unknown
171. *H. sylvestris* Mort. larva unknown
172. *H. occulta* (Eat.) larva unknown
173. *H. femoralis* (Eat.)
174. *H. pulchricornis* (Eat.)
175. *H. forcipata* (Eat.) larva unknown
176. *H. mclachlani* Klap.
177. *H. tigurina* Ris larva unknown
178. *Ithytrichia lamellaris* Eat.
179. *I. clavata* Mort. larva unknown.
180. *Orthotrichia angustella* (McLach.) larva unknown
181. *O. tragetti* Mosely larva unknown
182. *O. tetensii* Kolbe
183. *Oxyethira costalis* (Curt.)
184. *O. tristella* Klap.
185. *O. simplex* Ris McDonald, W. W., 1950
186. *O. frici* Klap.
187. *O. falcata* Mort. larva unknown
188. *O. distinctella* McLach. larva unknown
189. *O. sagittifera* Ris
190. *Oxytrichia mirabilis* (Mort.) larva unknown
191. *Tricholeiochiton fagesii* (Guin.)

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## Notes and Observations

THE ORIGIN OF LANTANA.—In his article on Teneriffe (*Ent. Record*, **73**: 29) Mr. Goodall writes: “. . . later identified as Lantana, an Indian shrub which has spread widely in the warmer parts of the world.”

Nairne in *The Flowering Plants of Western India*, published in 1894, writes: “This plant (i.e. *Lantana camara*) which has a strong smell of black currants, is a native of America, but has run wild nearly everywhere in Western India, and still more so in the south, being in the Madras Presidency a recognized nuisance”. G. B. Longstaffe, in *Butterfly Hunting in Many Lands*, also refers to Lantana as being a native of the West Indies, which has run wild in many places in the East (page 70).—D. G. SEVASTOPULO, F.R.E.S., P.O. Box 5026, Mombassa. 1.iv.1961.

EARLY BUTTERFLIES.—On 27th March I took a *Pararge egeria* L. at Studland, Dorset. I do not remember ever having seen this species so early before. On 25th March I saw my first *Pieris rapae* L. in the garden, and on 18th March a female *Celastrina argiolus* L. emerged from a pupa that had been kept through the winter in an unheated room.—H. SYMES, 52 Lowther Road, Bournemouth. 28.iii.1961.

EUCHLOE CARDAMINES L.—At mid-day on March 24th I saw a male *Euchloe cardamines* flying in Milford. Tutt mentions March examples

in 1893, resulting in full fed larvae and pupae in May, and Tunaley recorded one on 29th February 1896, but this early appearance seems worthy of record.—HAROLD B. WILLIAMS, West Moushill, Milford, nr. Godalming, Surrey. 27.iii.1961.

INFORMATION ASKED.—There seems to be no record of the book mentioned by Capt. Parsons (*antea* 51)—Dr. Wright's *A Few Nature Notes*—on the card index of the Radcliffe (Science) branch of the Bodleian Library, nor could it be traced by the staff in the printed catalogues of books published between 1936 and 1939. Under the title "Recent Literature", the *Entomologist* lists all books reviewed, in the index to each volume: indices for the years 1930-45, and those for '47-'48 and '57-'58 (in case of date misprint) were examined, but title and author remained elusive. "Perhaps privately published" was one suggestion offered.—D. LANKTREE, 13 Richmond Road, Oxford.

STRYMONIDIA PRUNI L. IN OXFORDSHIRE.—The following letter from Mr. R. F. Bretherton to Mr. P. Desmond Lanktree has been sent to me for publication, following Mr. Lanktree's note (*antea*, 96) on the discovery of *S. pruni* at Hell Coppice.—ED.

Ottershaw Cottage, Ottershaw, Surrey, 27th November 1960.

Dear Mr. Lanktree,—I was interested in your note in the November and, earlier, in the May, numbers of the "Record" about the late Sir Edward Poulton's "personal discovery" of *Strymonidia pruni* in the Oxford District; and in the implied correction of my own statement in "A List of the Macro-lepidoptera of the Oxford District" (1939) that the discoverer was the late Mr. W. F. Burrows.

I think there can be no doubt that Burrows was the original discoverer (at Hell Coppice, as Mr. Symes says), and that Poulton's own first capture of it was there, though I suppose that it is possible that he found one of the other nearby localities himself afterwards. Like Mr. Symes, I met Burrows, and had the story from his own lips in 1938. Besides, it was common talk among those interested when I went up as an undergraduate in 1923, though some of the versions of it were curiously embellished at Professor Poulton's expense!

The Hell Coppice area was little, if at all, known to Oxford collectors before 1918, as is shown by the complete lack of reference to the eastern woodlands in the Sidgwick and other Diaries which are still preserved in the Hope Department. It was, in fact, rather too distant, and was only approachable by paths or by lanes which even in the 'Twenties were singularly full of mud and potholes. Burrows as a schoolboy was living, or perhaps only on a visit, not far off. He caught what he rightly identified as a Black Hairstreak, but when he reported this at the Museum he was at first told to go away and not be a silly boy. However, when the authorities had looked at his capture, there was much excitement. An expedition was organised; the problem of transport was solved by the hire of an ancient horse brake, which was all that could be got in the last year of the First World War; and the party set off under the Professor's leadership, with Burrows in attendance as a guide-hostage faced with the prospect of condign punishment if his information proved to be incorrect. But *pruni* was found flying in numbers, and all was well, though it was said that the Professor performed some curious gymnastics while climbing the ash

tree which commanded the higher blossoms of the privet hedge. There used to be a photograph of the party and the horse-brake, which I have seen, I think in the Hope Department. Otherwise the above is second-hand evidence, though I have no reason to doubt its substantial accuracy. The exact locality was still something of a State secret in 1924, when I was told of it and first caught *pruni* myself.

To the list of Hell Coppice treasures given by Mr Symes (*Ent. Rec.* 68: 98-102) it may be worth adding *Tapinostola hellmanni*, which I first found there in 1935 at sugar and on rush blossoms, *Angerona prunaria* and among the butterflies, *Strymon w.-album* and *Thecla betulae*. Larvae of the last were quite common on stunted sloe bushes, but I never saw the butterfly itself, though I looked many times in August and early September. *Hemaris tityus* also occurred nearby.

I am copying this letter to Mr Jacobs, in case he cares to print any of it.

Yours sincerely,

(R. F. BRETHERTON).

## Current Literature

LES INSECTES II, by Paul A. Robert. Delachaux & Niestle S/A. Neuchâtel, Switzerland, 260 pp. This pocket-sized textbook is designed for the intelligent nature lover, and this, the second volume, deals with the orders of Hymenoptera, Lepidoptera, Rhynchota and Diptera, the author pointing out that the five orders of minute insects, Strepsiptera, Thysanoptera, Thysanoura, Anaploura and Aphaniptera are omitted as being unlikely to interest the amateur naturalists for whom the book is intended.

The introduction goes into the anatomy of the insect orders described here so that the descriptions may be understood, and throughout, both the line illustrations in the text and the author's beautifully accurate coloured plates are such as to assist the observer whether he be trained or not. A chapter is devoted to each of the five orders dealt with, and these are sub-divided to deal with the main divisions of the orders, and the more important families receive individual attention with notes on the main species, sufficient to exemplify the family. In the Lepidoptera section the author includes some notes on setting techniques, and as some of these are not widely known in this country, there is an added interest here.

Finally there is a short chapter on the ravages and benefits to man of insects and the economic aspect of many insects is discussed. The book is written in French and could well find a place in the pocket of the holiday visitor to Switzerland, or for the matter of that to other parts of the continent.

A particularly pleasing feature brought out in this book is that the continental popular names are based on the scientific names, thus the ruby wasp *Chrysis ignita* of our fauna is La chryside enflammée, and the pale tussock moth, *Dasychira pudibunda*, is L'orgye pudibonde, illustrating well that scientific names are appellations which can be used without linguistic difficulties whether the user is or is not possessed of a knowledge of Latin and Greek.—S. N. A. J.

*Alexandor* 2: Fasc. 1 has an interesting article on night collecting at flowers by H. de Toulgoet, a note on the different parts and editions of de Peyerimhoff's catalogue of the lepidoptera of Alsace by P. Viette, a note by J. Baraud on *Pieris ergane* Geyer in the eastern Pyrenees and an article suggesting local variation of *Limenitis populi* L. by P. C. Rougeot. H. Marion continues his revision of the French Pyraustidae with a plate illustrating 28 species. C. Herbulot comments on a collection of Geometridae from the department of Yonne; H. de Lesse writes on natural hybrids between *Lysandra coridon* Poda and *L. bellargus* Rott. and C. Dufay writes on a new French locality for *Hadena clara* Stgr.

*Butterflies*, Puffin Picture Book No. 115, by Arthur Smith and Vernon Shearer, 7/6. This picture book may be described as an aperitif for the young collector who may thereafter develop a real interest in entomology. The prominent species of the main families are illustrated, conventionally set and also at rest as they might be seen in nature; the life cycle is explained, and the early stages of some of the species are illustrated in colour or in black and white, mostly from original drawings, but one or two are copied from existing drawings and the source acknowledged. The families are also given their scientific names, but the Swallowtail is the only species accorded the dignity of generic and specific names and the meaning of scientific names could have been accorded a brief mention in the text, especially as such words as metamorphosis are included, but these may be a skilful way of whetting the appetite, which might have been sated by the too early use of scientific names for everything. Much ground is touched on in the short descriptive text which accompanies the very good drawings, collecting, metamorphosis, the main families, rare immigrants, and varieties are all dealt with and on the inside of the front cover is a table giving the months of appearance of the perfect insects. To jump from aperitifs to teething rings may be somewhat mixing metaphors, but this book would be a very good present on which the budding entomologist might cut his teeth.—S. N. A. J.

*The London Naturalist*, 39 (1959) was published in August 1960, and contains three articles which would be of direct interest to our readers, namely Further Notes on Relics of the Great North Wood, by J. E. Lousley; The Diptera of Bookham Common, by L. Parmenter; and Part II of the Supplement to the Butterflies and Moths of London and its Surroundings, by C. G. M. de Worms. Its 160 pages also contain a very wide assortment of articles on various Natural History subjects, all of which are of considerable interest. The Bookham Common and London Lepidoptera papers are obtainable as separates from the Secretary of the London Natural History Society.—S. N. A. J.

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XII<sup>TH</sup> INTERNATIONAL CONGRESS OF ENTOMOLOGY, LONDON, 1964.—Administrative machinery for the XII<sup>th</sup> International Congress of Entomology has now been set up. At a meeting held in the rooms of the Royal Entomological Society of London it was agreed that the Congress should be held in South Kensington, probably in the buildings of the Imperial College of Science and Technology, from 15th to 23rd July 1964. Professor O. W. Richards, F.R.S., Imperial College, London, S.W.7, was elected President of the Congress and Dr. Paul Freeman, British Museum (Natural History), London, S.W.7, Secretary.

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*Orthoptera.*—Crickets of the subfamily Gryllinae (except domestic Species) and grasshoppers of the subfamily Pyrgomorphinae from all parts of the World required in any quantity for research work in morphology, taxonomy, cytology, and experimental biology; dry or fluid preserved or living. Please contact D. K. Kevan and R. S. Bigelow, Department of Entomology, McGill University, Macdonald College, Quebec, Canada.

*Wanted.*—Seitz, A. *Macrolepidoptera of the World*, Vol. I. Barrett, C. G. *British Lepidoptera*, Vols. X and XI of large paper edition with coloured plates. All other recent literature on European Butterflies. Dr. Neville Birkett, 3 Thorny Hills, Kendal, Westmorland.

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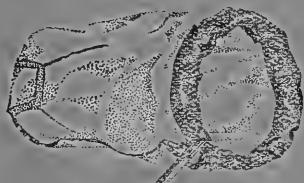
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## TO OUR CONTRIBUTORS

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## Editorial Note

The meagre proportions of the present number are the result of an apparent wave of diffidence on the part of almost all of our reasonably large, but never too large, list of contributors. It may be that the recent cold winds have blighted the promise of the earlier warm spell, but even such an occurrence is of interest, as we all like to know how the other fellow is faring.

We are pleased to have permission to add the name of our old friend H. C. Huggins to the Editorial Panel; whenever circumstances have allowed, he has supplied readers with useful accounts of microlepidoptera, and we look forward to further material shortly. In the meantime, it is not right that microlepidopterists should sit down and await these further papers, but should be contributing notes of their own. The same comment applies to others also.

The most desirable material is readable articles between 1,000 and 2,000 words, but both short notes and longer papers are welcome. See what you can do.

We print the first of a series of articles on the British Nepticulidae by A. G. Carolsfeld-Krausé of Copenhagen, who is a specialist on the family, and it is hoped that these will clear up some of the tangles and misconceptions that exist at present.

## The Changing Character of the New Forest

By Lt. Col. F. O. FRASER,  
I.M.S. (Retd.), M.D., M.R.C.S., L.R.C.P., F.R.Z.S.

I have known the New Forest for over seventy years and during those long years have seen many changes. Memories of my first visit are but few; as a youngster, I was of course after butterflies and, as it was in August, there was an extraordinary wealth of *G. rhamni*, far more so than we see them now-a-days; they dotted the ridings like so many daffodils as they hung from the blossoms of scabious which then formed a conspicuous part of the Forest flora. These Brimstones and the Fritillaries, the latter also abundant, are about all that I remember of the fauna. Concerning the flora, there was a wealth of flowers for which we look for in vain to-day; the arboreal scene was greatly different, deciduous forest prevailing; indeed I cannot recall seeing any of the great blocks of pine which now, more and more, monopolise space in the Forest.

A few years later, I visited the Forest at an earlier date, in the months of June and July to be exact, and then the ridings were simply alive with the numbers of *camilla* and *paphia*. Deciduous forest still largely monopolised the landscape and most enclosures were stocked with fine stretches of oak, beech and birch. Sallow was common, especially bordering the ridings. On a visit to Woodfidley in March, some twenty-five years ago, I must have seen well over one hundred *c-album*, fresh from hibernation, feeding on the willow blossom. For some years now, I have visited the same area and have sought in vain for the willow; all has gone and not a single *c-album* is to be seen.

Another species which has fallen a victim to the pine-plague is *lucina*; thirty years ago I knew of five flourishing colonies of this gem,

but to-day I do not know of any locality in the Forest where it can be found. All have been smothered by the ubiquitous spruce. I saw the last specimen in the Forest in Dame Slough enclosure, where at one time it was plentiful as well as the primrose, its food-plant; that was five years ago and I have sought for it in vain since; spruce had already been planted in the habitat but was still only less than two foot high. Since then, the spruce has grown and *pari passu*, the primroses, have disappeared under their spreading shade and the sterilising of the soil beneath them, and with their passing, *lucina* has gone the way so many of our species have done in the past. The herring-bone ditching and drainage which goes along with pine afforestation has done much to assist this relentless destruction of plant and insect life. Further drainage is destroying the bogs and marshes which harbour so much flora and fauna. Recently I explored a number of pine plantations to see how they affected the growth of honeysuckle and was not surprised to find that it was difficult to find a plant in most; perhaps this explains the rapidly decreasing numbers of *camilla*; back in the year 1920, I can remember seeing as many as a score or more at a single glance up-and-down a riding in Woodfildley; the bramble blossoms were attracting them in dozens. For the past few years, I have seen less than a dozen specimens during the season and in the course of long tramps through the ridings. The hibernacula could be found with the greatest ease but now it requires a long search to find even one. A graphic indication of how the forest flora is being systematically destroyed may be demonstrated by comparing a stretch of Forest with an adjoining private plantation. One such may be found adjoining Roe Wood where the road separates the Forest proper from a private holding belonging to the Haines family. You will search in vain for primroses or bluebells in the adjacent Forest, but, in striking contrast, the private holding is simply carpetted with the mingled yellow and blue of the two flowers. All have been ruthlessly plucked or rooted up in the Forest but preserved in the private spinney; the combined effect of pine afforestation and the greed of hordes of visitors is responsible for this vandalism. Even privacy does not deter the depredations of the latter, for I have frequently found picnickers in the private holding with their hands and even arms laden with huge bunches of stolen flowers, and if I have remonstrated with them, they have truthfully replied that they have been unable to find any flowers in the adjacent Forest.

Another change which I have noticed in the general character of the Forest is the gradual drying up or obliteration of standing waters. During the War, a number of small ponds were used to dump rubbish in left by the troops and then filled over with soil. These ponds harboured many species of coleoptera, odonata, trichoptera and of other Orders, which are now either very scarce or have vanished altogether. Ditching and drainage has augmented this tendency to the impoverishment of both plant and insect-water life.

The spread of pine is going on insidiously in three ways. The pine may be planted in open areas; it invariably replaces hard woods where an area such as oak has been felled; or thirdly, it replaces the hard woods by a process of "infiltration", which is by far the most insidious of all, since such areas are not included in the stated area allotted to soft woods. In many places, the young pines are evidently self-sown and may be seen growing amongst the oaks, but in some areas these

same seedlings are already in straight lines; either the redundant ones have been rooted out or seed has been deliberately sown; I came to the opinion that thinning-out had been resorted to rather than the latter method. Where pine seedlings have invaded areas allotted to oak or beech, they should be weeded out or cut down and not permitted to grow until they have stifled the undergrowth. In talks with Forest wardens, I have been told that the Forest is now paying its way for the first time and so the policy of more and more pine is to continue. It would seem to be inevitable that unless the Nature Conservancy takes early and drastic steps to curtail the planting of soft woods and to insist on the planting of more deciduous forest, and further to limit drainage and curtail the plundering of flowers by visitors, the Forest will become a dreary, depressing homogeneous waste of pine forest.

## Notes on Neps.

By A. G. CAROLSFELD-KRAUSÉ

As an attempt to attract the interest of lepidopterists to the study of the Nepticulidae, a family of the micros so badly ignored by the British entomologists since the days of Stainton and the team around him, the writer will now and then turn up in the pages of the *Record* with small notes on the Neps, pointing out current problems, errors which have crept into the literature and small practical hints concerning the study of these so interesting but also very difficult tiny micros, the study of which has given the writer so many happy hours during the last 35 years.

### Note 1 on *Stigmella* (*Nepticula*) *vimineticola* Frey, 1856

This species has caused some trouble to lepidopterists because of a misunderstanding of the appearance of its mine, which as early as in the last century has crept into the literature, and has led to this species still being widely confused with *Stigmella* (*Nepticula*) *obliquella* Heinemann, 1862.

Even in much of the most recent British literature the two species are regarded as being conspecific, though they are two different and well defined species. So Ford in "A Guide to the Smaller British Lepidoptera", 1949 just as Hering does as late as in 1957 in "Die Blattminen Europas", describes the mine wrongly, confusing it with the mine of *obliquella*.

This mistake is rather odd indeed, as Frey in his original description in *Die Tineen und Pterophoriden der Schweiz*, 1856, pp. 382-383, quoted by Tutt in "British Lepidoptera", 1899, gives a very good and clear description of the mine; but already Fletcher confused the mines of the two species, as it appears from Tutt *l.c.*

The *vimineticola* mine, as the writer knows it from Austrian specimens on *Salix incana* (ex. coll. Klimesch), has the ovum on the upper side of the leaf, most often near to the stalk, in which case the mine is completely straight, running along and very close to the midrib of the leaf towards its tip. More rarely the ovum is placed on the margin of

the leaf, some distance from the stalk, in which case the mine runs towards the base of the leaf before it turns towards the tip. A single mine of the batch has the ovum placed near to the tip and runs towards the base.

The first part of the mine is practically invisible, even by the microscope, but where after an ecdysis it becomes visible to the naked eye, it is rather broad and is nearly filled by dark, blackish-brown frass. It *never* terminates with a blotch but only with the usual, straight and slender part of a normal gallery-mine, the part which the larva occupied immediately before leaving the mine, and this part is not conspicuously broader than the last part containing frass.

In nature the mine must be very difficult to see, and Frey *l.c.* also says: "Darum schwer zu sehen", which sentence Tutt *l.c.*, with reference to Frey, oddly enough translates as: "The mine is on that account sure to attract attention, (Frey)", which is directly contrary to his literal quotation of Frey's statement.

Though obviously no British description (known by the writer) fits the appearance of the genuine *vimineticola* mine, it is, however, quite sure that *vimineticola* is a British species, as Beirne's figure of the male genitalia of a specimen from the B.M. in "Proceedings of the Royal Irish Academy", Vol. L, Sect. B, no. 9, p. 215, fig. 50, certainly represents the genitalia of *vimineticola*.

The genitalia of *vimineticola* bear a very considerable resemblance to those of *St. (Nept.) salicis* Stainton, 1849; a description of the differences between the genitalia will, however, overstep the limits of this little note, besides being unnecessary, as the descriptions given in British literature of the mine of *salicis* are so excellent that a confusion with other mines should be impossible.

*Obliquella* differs in the male genitalia from *vimineticola* mainly in that the latter has the ventro-caudal part of the valva (cuiller, sensu Beirne) the cucullus, sharply pointed, while in *obliquella* it is rounded, and in that this last mentioned species has the ventro-caudal arms of gnathos (in Beirne *l.c.* wrongly named the subsaphium, where the name *vimineticola* is also spelled wrongly) united at their bases and caudally diverging, while in *vimineticola* they are clearly separated basally and caudally nearly parallel.

The female genitalia of the two species can be separated easily by a hand-lens without dissection, as *obliquella* has a long freely protruding, pointed and laterally compressed oviscapt (= "ovipositor"), which is not present in *vimineticola*.

*Vimineticola* seems to be a southern species, it has not been found in Scandinavia, where it probably does not occur. Most obviously it will be found to be confined to the narrow-leaved species of *Salix*. That Fletcher confused the mines of the said species is well understood, as one of the mines collected by Klimesch as being *vimineticola* proved to be an *obliquella* mine, other mortals may be allowed to drop a brick, when such a connoisseur as Klimesch could do it.

## Notes and Observations

MORE EARLY APPEARANCES IN 1961.—The most remarkable early appearance that I have observed this year was a *Callophrys rubi* L. on 18th April. It was resting on a holly leaf in the New Forest, where I

was looking for *Celastrina argiolus* L., of which species I saw about ten on that day. I had previously seen one on 11th April and three on 13th April, also in the New Forest. My first *Pieris rapae* L. was seen on 25th March, but in 1948, I took one on 18th March. On 19th April I found a *Cucullia chamomillae* Schiff. on a paling near my house. My previous early record for this was 27th April 1952, also on a paling in the same neighbourhood. In 1941 I found one on a telegraph pole at Sparsholt near Wantage, as late as 26th May.

With reference to my capture of *Pararge egeria* L. at Studland (near the beach, incidentally), the Rev. F. M. B. Carr tells me that since he came to live in this area in 1947, he has no record of *P. egeria* in March except in 1948, when he saw two or three in the New Forest on 23rd and 30th, and one in Bere Wood on 27th March.—H. SYMES, 52 Lowther Road, Bournemouth. 2.v.1961.

**OPISTHOGRYPTIS LUTEOLATA L.**—While on my way to post Mr. Lanktree's proofs of his *luteolata* papers to him on 22nd April, I was pleased to note a freshly emerged specimen of this species on a garden fence. During the ensuing week, I saw several (possibly a dozen) specimens on fences at Bromley.—S. N. A. JACOBS, 54 Hayes Lane, Bromley, Kent. 10.v.1961.

**FIRST APPEARANCES IN 1961.**—I wonder whether some of the following first appearances this year which I have noted will interest readers of the *Entomologist's Record*: 11th January, *Erranis marginaria* Fabr., not seen again until 10th February; 17th February, *Alsophila aescularia* Schiff.; 16th March, *Selenia bilunaria* Esp., and 30th, *Chaonia ruficornis* Hufn. In April, on 1st, *Orthosia advena* Schiff.; 2nd *Selenia tetralunaria* Hufn. and *Lithina chlorosata* Hufn.; 12th, *Ochropleura plecta* L.; 17th *Pheosia gnoma* Fabr., *Drepana falcataria* L., *Xanthorhoe spadicearia* Schiff., *Acasis viretata* Hubn. and *Aethelura punctulata* Schiff.; 18th, *Apatele rumicis* L.; 19th, *A. psi* L. (I presume); 24th, *Lophopteryx capucina* L.; 26th, *Notodonta dromedarius* L.; 28th, *Thera obeliscata* Hubn.; 30th, *Agrotis puta* Hubn., *Caradrina clavipalpis* Scop. and *Opisthograptis luteolata* L.

All the above were seen either at mercury vapour light in my garden here or on fences in adjacent roads. I have not seen *Panolis flammea* yet this year, although I saw three last year, the first on 25th April.—D. R. M. LONG, White Croft, Mavelstone Close, Bromley, Kent. 2.v.1961.

**CELERIO LINEATA L., LIVORNICA ESP.**—Recently a fair number of this species has appeared at my mercury vapour lamp at Nyali, on the Mombasa North Mainland. It is not normally a Mombasa species and I wonder whether this visitation indicates a possible *livornica* year in Britain.

In East Africa I have found it one of the most obliging Sphingids as regards egg-laying, and incidentally it is the only Sphingid I know in which the first instar larva has a black head. For some unaccountable reason it is omitted by Hering from his account of the Sphingidae in Seitz's *Macrolepidoptera of the World*.—D. G. SEVASTOPULO, F.R.E.S., Mombasa. 15.v.1961.

**PYRAUSTA ASINALIS HUBN. AT PENMAENMAWR.**—When I took a single specimen of this species at Abersoch, Caernarvonshire on 25.vii.1949, it was thought at the time that this constituted the first record of this moth in that county. (Proceedings of the Chester Society of Natural Science, Literature and Art, 1950 p. 59.). In a further volume of these Proceedings, that for 1951, 1952 and 1953, H. N. Michaelis records specimens of *P. asinalis* taken in the Llandudno district in 1910 and at Great Orme in 1953. Recently when looking through the collection of lepidoptera formed by the late A. Smith of York, and now housed at the Natural History Museum, Scarborough, I was therefore very interested to see a few specimens of *P. asinalis* bearing the label—"Penmaenmawr, 1913". It would seem therefore that the species is fairly widespread and probably not rare in the north Wales coastal area. It perhaps also emphasises the value of publishing ones records. Unfortunately, Smith, who was an excellent field lepidopterist, published very little though he turned up many interesting and unexpected species wherever he collected.—DR. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 8.v.1961.

**AN ENTOMOLOGICAL MYSTERY.**—Recently while working through a number of specimens of the genus *Mellicta* Billberg I wanted a genitalia mount of *athalia* Rott. for comparative purposes. I picked out a none too good specimen from my series of this species and proceeded to make the mount and do the dissection. I was greatly surprised to find that the armature was exactly like that figured by Higgins (*Trans. R. ent. Soc. Lond.*, 106, 76) as *Mellicta aurelia* (Nickerl). In particular the aedeagus appears to be distinctive and mine exactly matches Fig. 69a of that paper. The interesting thing is that the male I prepared is one of a pair sent me some years ago by, I now believe, the late A. Smith of York as a pair of *athalia*. The data on them is:—"R. Long, Beddington, Surrey, 1925".

Though I have no note of Smith sending me the specimens concerned, confirmation of this came recently on a visit to Scarborough when I had the opportunity of seeing the Smith collection in the Natural History Museum there. Among his series of *cinxia* (sic) was a typical *athalia* with Essex data and, in addition, two specimens of *aurelia* bearing the same data as my own.

I wonder if any reader can shed any light on the origin of these butterflies with English data? There is, I feel quite sure, no doubt that these specimens were from imported material—ova, larvae or pupae and were not in fact taken in Surrey at all. It is possible that other collectors will find "*athalia*" in their collections with the same data and it would be most interesting to hear if this is the case.

*Mellicta aurelia* is stated by Higgins *l.c.* to have a central and eastern European distribution. It has, however, been recorded from northern France and from Belgium. The elucidation of this little problem shows once again the value of genitalia examination in the separation of superficially similar species. It also emphasises the fact that all specimens should be labelled with true and accurate data. Be sure your sins will find you out!—DR. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 7.v.1961.



On 22nd April while sweeping *Anthriscus sylvestris* in Madingley Wood, near Cambridge (Grid Ref.: TL4060) I caught two specimens of *Limonia* (Tipulidae). These were identified using Coe, R. L. Handbooks for the identification of British Insects. Vol. IX, Pt. 2, as *L. nigropunctata* Schummel 1♂, and *L. Masoni* Edwards 1♀. As Coe describes *L. masoni* as rare in Derbyshire, Norfolk, Oxon., and Surrey, and *L. nigropunctata* as local, I returned next day and caught *L. masoni* 5♂ 2♀, *L. nigropunctata* 1♂ 3♀, and *L. flavipes* Fab. 1♀. These were swept in a few minutes from the same patch of Cow Parsley. It is worthy of note that this was April, whereas the stated flight periods are *L. masoni*, June, and *L. nigropunctata*, May-August.—R. R. BURK, Great Haydesden, Tonbridge. 27.iv.1961.

INFORMATION ASKED.—With reference to Mr. D. Lanktree's note (*antea* 126) the book entitled *A few Nature Notes* by the late Dr. F. R. Elliston Wright was published privately in 1926 and again as a revised edition in 1932. This is a delightful publication and an excellent example of what a list of the fauna and flora of an area should be. About ten years ago when on holiday in Devon I visited Dr. Wright, who informed me that only a very limited number of both editions of the work were published and that it always has been extremely scarce. Although I have been collecting local lists for about thirty years it was quite some time before I was able to acquire copies of both these editions.—ARTHUR A. LISNEY, M.A., M.D., F.R.E.S., Dune Gate, Clarence Road, Dorchester, Dorset.

## Current Literature

A LIST OF IRISH BUTTERFLIES, E. S. A. Baynes, O.B.E., F.R.E.S. Irish Stationery Office, 2/- (1960). No such list has been published since Lt. Col. C. Donovan's *Catalogue of the Macrolepidoptera of Ireland* in 1936, and the present list consists of 10 + ii pp. in a strong paper cover, strong enough to allow for regular handling. It lists 37 species to which is added a list of 8 species noted as doubtful records. The county distribution of each species is given with brief comments. From Mr. Baynes also comes a report of insect migration in Ireland during 1960.—S. N. A. J.

JOURNAL OF THE LEPIDOPTERISTS' SOCIETY, 14, No. 2. 31.iii.1961. Roger W. Pease, jun., opens with a long, well-illustrated paper on the first instar larvae of Saturniidae, with 51 figures of setae and anatomic details, a key for identification of the larvae, and a short bibliography. M. S. Obraztsov and J. A. Powell write on a new Cnephasiid genus in which are included four new species described here by Mr. Powell. There are fourteen figures of genitalia dissections. Kodo Maeki and Chas. L. Remington contribute Part 3 of their study of the chromosomes of North American Rhopalocera, including Lycaenidae, Danainae, Satyrinae and Morphinae. There are 41 drawings and half tone micro-

photographs of chromosome patterns and two tables of chromosome numbers of various species, and a long list of references. David L. Bauer describes a new species and a new subspecies of *Chlosyne* from Mexico with a half tone plate, while Julian N. Jumalon illustrates a very curious "Siamese twin" *Parthenos* from the Philippines; this specimen has two apparently normal and complete bodies attached at the thorax, legs and antennae being normal to each body. A fine malanic *Papilio glaucus canadensis* Rothschild and Jordan is described from Milwaukee, Wisconsin, by James A. Ebner. The portion for field collectors deals with various types of larval breeding cage and is written by Joseph Müller.—S. N. A. J.

THE NIGERIAN BUTTERFLIES (John Boorman & Patrick Roche), Part I, Papilionidae (1957), and Part V, Nymphalidae, Sec. 3 (1959), have been published to date by Ibadan University Press.

A well-illustrated and very cheap introduction to the butterflies of Nigeria and Cameroons. The photographs and brief text-intended to make identification easy, are extremely well done. There are useful indications of environment and degree of availability.

I do think that in the brief preface a mention could have been made of the very important factor of dry and wet season forms—the large deep-coloured and strongly-built wet season forms may have tiny pale-coloured and almost patternless dry season forms. The short time and appearance of flight is characteristic also: some seasons certain species may be abundant, and for several years not again seen in the same locality.

It is surprising that no mention is made of the female form *thersander* of *Papilio phorcas* Cr., and there is also a danger of the inclusion of species based on an original wrong locality.

Although there is a great deal of literature on the butterflies of South, East and Central Africa, West Africa has been almost entirely neglected. A very useful contribution was Berger's Papilionidae Catalogue, part of *Annales de Musée du Congo Belge*, Tervuren, 1950.

This new series will be extremely useful, not only to Europeans in Nigeria but to Nigerians. With Independence, many West Africans, including children and school teachers, with an increasing pride in their country, endeavour to make collections of butterflies, they are artistic and love beauty and colour. It is hoped that space will be available for simple notes on collecting and the preservation of specimens.

In Central Congo and in undeveloped areas of West Africa, during 30 years I have found that even the most primitive Africans are very keen observers, and this has resulted in my obtaining many rare, and even new, species through the aid of illustrations.

Perhaps this excellent publication will one day result in Nigeria and Ghana competing in a Government publication on the lines of Professor Alexander B. Klots' *The Field Guide to the Butterflies of North America*, and similar Field Guide series—Birds, etc., and in forming Museums of Natural History.—F. L. JOHNSON, M.B.E., F.R.E.S.

*Lambillionea* 60; parts 5-6 and 7-8 have an article by P. Viette on the Epipyropidae of Madagascar, a family of Lepidoptera which turn

the tables by parasitizing the larvae of certain Cicadidae, Henri-Marie Warlet writes on the presence of *Satyrus hermione* L. in Belgium and L. Scarlet continues his notes on lepidopterous ova. E. de Laever writes on the geographical distribution of *Cossus terebra* Schiff. and E. Janmouille continues notes on the less known species in the Belgian lepidopterous fauna. Parts 7-8 consist mainly of a symposium on *Colias palaeno europome* Esp. by J. Hackray, L. A. Berger and L. Scarlet, with a half-tone block of the larva and pupa.—S. N. A. J.

From my friend Dr. Ramon Agenjo of Madrid, I have two separates from *Eos* and from *Boletin del Servicio de Plagas Forestales* (1960). The first concerns the distribution and morphology of *Hipparchia statilinus* Hufn. in Spain, and includes many records, a distributional map, and figures of the male and female genitalia. The second deals with *Dioryctria nivaliensis* Rebel as a pest of *Pinus insignis* plantations on the Isle of Teneriffe, and beside a very detailed text, a fine coloured plate of the imago, the larva and pupa, and also of the workings of the larva and the puparia; a black and white plate gives eleven figures of genitalia and other anatomical details while four half-tone figures show a sectionized twig with the larval working down the middle, the bent over branch terminations characteristic of infestation, and a close and a more general view of infested two-year-old trees. This work should be of considerable interest to forestry students.—S. N. A. J.

## Current Notes

CHAIRMAN OF THE NATURE CONSERVANCY.—Lord Hailsham, the Minister for Science, has appointed Lord Hurcomb to be Chairman of the Nature Conservancy in succession to Mr. Arthur Bryce Duncan, who is retiring from the Conservancy after a long and distinguished period of service.

Lord Hurcomb will hold office as Chairman of the Nature Conservancy for the residue of his term of office as a member of the Conservancy, which expires at the end of March, 1962.

Lord Hurcomb is Chairman of the Conservancy's Committee for England, and is also a Member of its Scientific Policy and Finance Committees.

The Nature Conservancy announces the following appointments:—Professor J. B. Cragg, as Director from 1st June 1961 of their Merlewood Research Station, Grange-over-Sands, Lancashire; Dr. K. Mellanby, C.B.E., as Director from 1st October 1961 of their new Monks' Wood Experimental Station, near Huntingdon, to be built on a newly acquired site adjoining the Monks' Wood National Nature Reserve.

The main research at Merlewood, which the Conservancy set up in 1952, concerns the study of woodland ecology, with the emphasis on nutrient cycles (i.e. the biological and physical processes in which soils and living organisms of a woodland are involved). Merlewood also houses the laboratories for work on moorland ecology carried out at

the Moor House Field Station on the Westmorland Pennines near Alston, Cumberland, which comes under the Director at Merlewood.

The site at Monks' Wood consists of 66 acres and will allow room for extensive field experiments. When building is completed in 1962, it will house three teams studying the effects of toxic chemicals on wild life, ecological management of native woodlands and scientific problems of conservation. The station will also form a base for field studies of the Diploma Course on Conservation of University College, London, and for other University and related activities. The station is already functioning in embryo in temporary premises and it is hoped that it will be fully operative by 1963.—THE NATURE CONSERVANCY, 19 Belgrave Square, London, S.W.1.

#### BRITISH TRUST FOR ENTOMOLOGY LTD. WICKEN FEN FUND.

The following letter has been received from Mr. N. D. Riley:

"You will remember that, following the death of Mr. Edelsten, who for many years made this annual appeal, the Royal Entomological Society of London undertook the management of the Fund as an interim measure.

The British Trust for Entomology has now assumed responsibility for the Fund, by arrangement with the Royal Entomological Society of London, and it is on behalf of the Trust that I write to you now in the hope that you will see fit to continue to contribute, for the need is still urgent.

Due to rising costs of labour, the services of one of the Keepers at the Fen had to be dispensed with last year. Until this step was taken Fen management had been continued on established lines by "borrowing" from Special Funds; the general account is now "in debt" to the Special Funds to the extent of some £600. Far more people now visit the Fen than formerly and, thanks to modern private transport facilities, many visits are unannounced beforehand; the need for more competent keeping at the Fen has increased. A further consequence of the reduction in the number of Keepers and the additional work they are having to carry out keeping, is that the agreed management and development plans drawn up in 1956 have had to be slowed down.

Entomologists have a very special interest in Wicken Fen, dating back to many years before the National Trust acquired it. It really does behove us to support the Trust as generously as we can. Since Mr. Edelsten's death nearly two years ago, £67 13s 11d has been collected and forwarded to the National Trust, who credit all such sums directly to the Wicken Fen Management Committee. This represents less than £35 a year. I am certain that entomologists can, and indeed should, do better than this. May I ask you to bring the needs of the Fen to the notice of other entomologists too, for this appeal is primarily addressed to entomologists, in the hope that the basis of support may be gradually and effectively widened?

Cheques should be made payable to The British Trust for Entomology Ltd., Wicken Fen Fund, and sent, like other remittances, to me personally at the British Museum (Natural History), Cromwell Road, London, S.W.7.—Yours sincerely, N. D. RILEY."

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## EXCHANGES AND WANTS

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*For Sale.*—Entomological Cabinets, one 20 Drawers, one 17 Drawers, and one  
16 Drawers Easy payments if required.—R. W. Watson, "Porcorum,"  
Sandy Down, Boldre, near Lymington, Hants.

*Orthoptera.*—Crickets of the subfamily Gryllinae (except domestic Species) and  
grasshoppers of the subfamily Pyrgomorphinae from all parts of the  
World required in any quantity for research work in morphology, taxo-  
nomy, cytology, and experimental biology; dry or fluid preserved or  
living. Please contact D. K. Kevan and R. S. Bigelow, Department of Ento-  
mology, McGill University, Macdonald College, Quebec, Canada.

*Wanted.*—Seitz, A. Macrolepidoptera of the World, Vol. I. Barrett, C. G.  
British Lepidoptera, Vols. X and XI of large paper edition with coloured  
plates. All other recent literature on European Butterflies. Dr. Neville  
Birkett, 3 Thorny Hills, Kendal, Westmorland.

*For Sale.*—Weird and interesting caterpillars of the Japanese Owl Moth (*Brah-  
japonica*). Simple to rear on privet. Prices: March, 4/6 doz. (small);  
April, 6/6 doz. (medium); May, 8/6 doz. (large). Post free. T. H. Fox,  
28 Boxwell Road, Berkhamsted.

*New to Britain.*—Larvae of Mexican Tiger Moth—*Epantheria deflorata*. Feeding  
on Dandelion or any low plant. 2/6 doz. small. 4/6 doz. medium (May).  
T. H. Fox, 28 Boxwell Road, Berkhamstead, Herts.

*For Sale.*—Small larvae of Epicnaptera ilicifolia (Regensburg) Small Lappet.  
Feeding Sallow. 1/- each. Post 3d. T. H. Fox, 28 Boxwell Road,  
Berkhamsted.

*Wanted.*—Second-hand Mercury Vapour Moth Trap. Suitable for 200-250 volts. A.C.  
supply.—J. F. Burton, B.B.C., Natural History Unit, Broadcasting House,  
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# THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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# THE ENTOMOLOGIST'S RECORD

## AND JOURNAL OF VARIATION

*Edited by* S. N. A. JACOBS, F.R.E.S.

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# A New Subspecies of *Zygaena hippocrepidis* Hübner, Lepidoptera : Zygaenidae

By W. G. TREMEWAN

(Department of Entomology, British Museum (Natural History))

In a collection of British and European *Zygaena* species brought in for determination by Mr. W. Parkinson Curtis, is a series of a new subspecies of *hippocrepidis* Hübner. The series comprises thirty-five specimens from Dieu-le-fit, Drôme, south-east France.

Until quite recently, *hippocrepidis* Hübner had been considered a subspecies of *transalpina* Esper but Alberti (1958, 1959) has separated them as distinct species. The type race of *hippocrepidis* occurs in Thuringia, southern Hanover and Lower Franconia. Oberthür described the ssp. *provincialis* from Montrieux, near Méounes, in the department of Var. This subspecies is double brooded and was described from specimens of the second generation flying in September and October. Consequently, Burgeff (1926) has named the first brood f. *aestivo-provincialis* and had before him specimens taken in the neighbourhood of Marseille in July. There are three examples of this seasonal form in the Oberthür collection in the British Museum (Natural History). The specimens were taken in 1908 in the neighbourhood of Marseille by Foulquier and apart from being much larger differ little from the autumn generation.

It is to be expected that the Dieu-le-fit population would be more closely related to ssp. *provincialis* Obthr. but it is much nearer to ssp. *occidentalis* Obthr. which was described from Dompierre-sur-Mer, Charente-Inférieure.

## ***Z. hippocrepidis* Hübner ssp. *curtisi* ssp. nov.**

♂, 28-30 mm. wingspan. The ground colour of the forewings is greenish or bluish-black. The forewing spots and hindwings are orange-vermilion in colour while the hindwings have a narrow black terminal border. Spot 6 is usually confluent with spot 5.

♀, 32-36 mm. wingspan. The female differs little from the male but the orange-vermilion colour has a slight admixture of yellow in some specimens, especially around the basal area of the hindwings. In two females, the forewing spots are confluent in pairs.

Holotype ♂, "Dieulefit Drome France 3/10:vii:1934 W. P. Curtis"; on the reverse side of the data label is the number "45041".

Allotype ♀ with similar data to the holotype but dated "5/10:vii:1934", and on the reverse side of the data label is the number "45033".

Paratypes 9 ♂♂ and 6 ♀♀ with similar data but dated as follows:  
2 ♂♂ "27:vi:1934"; 2 ♂♂ "28:vi:1934"; 1 ♂ and 1 ♀ "1:vii:1934"; 1 ♂ "5:vii:1934"; 2 ♂♂ and 5 ♀♀ "3/10:vii:1934"; 1 ♂ "5/10:vii:1934".

The holotype, allotype and twelve paratypes are in the British Museum (Natural History) collection; 3 paratypes in collection W. Parkinson Curtis.

There are eleven further specimens in poor condition for which reason I have not included them as paratypes.

**Z. hippocrepidis** Hübner ssp. **curtisi** Trmn. ab. **miniacens** ab. nov.

Four males and one female of this new subspecies have the orange-vermilion colour replaced by pure vermilion in both the forewing spots and the hindwings. In the holotype, allotype and one paratype spot 6 is not confluent with spot 5.

Holotype ♂, "Dieulefit Drome France 27:vi:1934 W. P. Curtis".

Allotype ♀ with the same data.

Paratypes: 2 ♂♂ with the same data, 1 ♂ with similar data but dated "5:vii:1934".

The holotype, allotype and 1 paratype in collection British Museum (Natural History); 2 paratypes in collection W. Parkinson Curtis.

A further specimen is not included as a paratype because of its poor condition.

**Z. hippocrepidis** Hübner ssp. **curtisi** Trmn. ab. **cingulata** ab. nov.

A male has a vermilion abdominal belt on segment 5.

Holotype ♂, "Dieulefit Drome France 3/10:vii:1934 W. P. Curtis", in collection British Museum (Natural History).

Compared with the nominate subspecies, ssp. *curtisi* may be readily separated by the conspicuous orange-vermilion colour of the forewing spots and hindwings. It may be distinguished from ssp. *provincialis* Obthr. by the broader forewings and hindwings and the larger spots of the forewings, also by the orange-vermilion coloration. As mentioned previously, ssp. *curtisi* is nearest to ssp. *occidentalis* Obthr., especially in the shape and the confluence of the spots but it differs strongly in coloration. In *occidentalis*, the forewing spots and hindwings are vermilion compared with orange-vermilion in *curtisi*. Odd specimens occasionally occur in ssp. *occidentalis* which have orange-vermilion spots and hindwings and strongly resemble ssp. *curtisi*. However, these examples are only found as rare aberrations.

In the series of *filipendulae* in the Curtis collection is a six-spotted *Zygaena* which I believe may be a hybrid resulting from a cross-pairing between *filipendulae* L. and *lonicerae* Scheven. The specimen is from the Druitt collection and was captured at York in 1900. The exact locality is probably Strensall Common where both species are known to have occurred. Unfortunately the specimen is a female and the genitalia do not show good intermediate characters. The ostium is identical with that of *filipendulae* but the ductus bursae is abnormal for that species and has characters which are found in *lonicerae*. Compared with female *filipendulae* from the same locality, the forewings are longer and more pointed at the apex, spot 4 is of the same shape as that in *lonicerae* while spot 6 is reduced and about half the normal size. The hindwing border is also slightly broader than that in *filipendulae* while the hindwings are narrower and have a more pointed apex than the hindwings of *filipendulae*.

I would like to thank Mr. W. Parkinson Curtis for presenting the holotypes, allotypes and the majority of the paratypes of the new subspecies of *hippocrepidis* Hübn. to the British Museum (Natural History) and also for his kindness in presenting the supposed hybrid from York.

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———. 1959. *Ibid.*, **35** (1): 203-242.  
Burgeff, H. 1926. *Mitt. münchen. ent. Ges.*, **16**: 82.

## Yugoslavia Revisited

Major General C. G. LIPSCOMB, C.B., D.S.O.

This spring my wife and I determined to pay one more visit to Yugoslavia before my tour of duty with B.A.O.R. comes to an end later in the summer. Accordingly, a Sunday morning in mid-May found us setting forth down the autobahn for a camping holiday with two companions who had joined us with their car from England. Our object was first to visit a certain river in Croatia to make contact once again with its fabulous trout, and then to penetrate some two hundred miles further south to Mostar in central Yugoslavia, where the fishing was also reputed to be good. On the return journey we planned to visit collecting grounds in the Istrian Peninsular that I had been familiar with in the autumn of two years ago, and of which an account has appeared in the *Record*. We had a common interest in natural history and flowers, birds and entomology were all grist to our particular mill. This article is an account of our experiences in a country that is still very much off the beaten track and not nearly so well known or written up as other parts of Central Europe this side of the Iron Curtain.

We stuck to the autobahn till we were just short of Salzburg, where we turned off it to find accommodation for the night in a hotel just this side of the Austrian border. As we had passed through Munich it had begun to rain, and this continued all that night (May 14th) and the following day when we motored across Austria. The rain made our windscreen wipers work overtime, the rivers were in flood and the high ground was blotted out by low-lying cloud. Summer had really come, we thought! Late that afternoon we crossed into Yugoslavia, just south of Villach and spent that night in a hotel in Bled. It continued to rain and the temperature was most unseasonably cold. We left Bled on the following morning—it was still trying to rain—and set off for the coast where we hoped to find conditions better. In this we were disappointed but at lunch time when we were eating our sandwiches at the side of the road just south of Rijeka we were cheered by the sight of three cock Golden Orioles as they flashed past us in all their yellow splendour. That evening we reached our river and pitched our tents under very damp and cold conditions. For the next four days the foulness of the weather was only compensated for by size and quality of the trout we caught, but during this period not one single butterfly did I see on the wing. In fact, the only sign of entomological life was a half grown brood of *Nymphalis polychloros* L. larvae feeding on a willow tree by the river bank. On the 21st we had had enough of the weather and left for Mostar where we hoped for sun and warmth.

That night after a cross-country journey in bad weather and over most indifferent roads, we reached Split, by way of Knin and Sinj. We went to ground in a hotel as our companion's wife was not feeling too good and we hoped a couple of days rest might put her right. The

following day, 22nd May, the sky cleared in the afternoon and we motored up the coast to Trogir where, after looking round this attractive little seaport, we walked up the hill behind the town. There were no butterflies to be seen, but the flowers were lovely and we were particularly attracted by the large bright red waxy blossoms of a shrub we thought was probably a pomegranate. It was growing everywhere, both in the gardens and on the hillside. Several Hoopoes were seen both here and in Split itself, their chequered plumage and large crests making them very conspicuous.

On the following morning we woke to find the sun at last shining and a clear sky and lack of wind gave promise of a better day. The ailing wife declared she was much better so after breakfast we set off again for Mostar taking the coastal road as far as Makarska, before striking inland over the Susvid pass. This coastal road was quite lovely with great towering mountains on one side and the very blue sea a short distance away on the other. Further north on the same route the blue of the wild sage is the predominant colour, but here a large flowered and sweet smelling broom had replaced it, covering the mountain-side in places with a sheet of bright yellow. This broom in combination with the blue of many forms of campanula and the pink of several type of dianthus all against a background of grey limestone rocks made a picture never to be forgotten.

In places the hillsides were covered with the Mediterranean Pine and the last year's webs of what I imagine was the processionary caterpillar moth were still attached to their branches like so many coconuts. To leave the coastal road and get over the Susvid pass we had to climb some 3,000 feet through a series of hairpin bends, with wonderful views of the coast and it was about now that I saw my first *Papilio machaon* L. and *Iphiclides podalirius* L. as they flew along the hillside. The birds, too, were becoming more interesting and woodchat shrikes, lesser grey shrikes and black-headed buntings, a bird like the familiar yellow hammer but with a black head, were beginning to appear while every now and then one got a sight of the lovely little black and white wheatear, known as the black-eared chat. Bee-eaters, too, were first seen a few miles from Mostar as they sat outside their nesting holes on a cliff-face by the road-side. New and interesting flowers noticed during this part of the journey were dark blue irises and a small reddish gladiolus growing in profusion in places on the hillsides that flanked the road.

We reached Mostar in the late afternoon, and while our companions went into the town to find a hotel—the wife was again feeling rather rotten—we made our camp on open ground by the river Buña, a tributary of the Neretva and some twelve miles south of Mostar. We were lucky in our camp site as it was well away from main roads and villages, right on the river and surrounded by rough fields in which were a profusion of flowers. Willow, blackthorn, bramble and similar bushes lined the river banks and a very quick reconnaissance, after putting up our tent, revealed a large half-grown brood of *Nymphalis antiopa* L. larvae feeding on willow. I was delighted to make this discovery as it was the first time I had come across this insect on the continent where generally it has been very rare or absent during the four years we have been out here. *Vanessa cardui* L. and *Colias croceus* Fourc. were much in evidence near the camp, the latter very fresh but the former ranged from freshly emerged specimens to others in the

last stages of decrepitude. That evening the local farmer's wife brought us eggs and milk, the latter being extracted on the spot direct into our milk jug from a cow tethered near our tent!

The following morning I motored into Mostar to see how the patient was and to find out whether she was fit to resume a camping existence. I was met outside the hotel by the husband with the remark that the news wasn't too good this morning. The patient had developed measles and was in bed with a suspected high temperature and was covered with rash! No wonder the poor girl had been feeling rotten and, of course, if one must have measles it is better not to wait till one is rising fifty and then to develop it in the back of beyond amongst a semi-Moslem community not one word of whose language can one understand!

To cut a long story short, my companion was lucky in getting the services of a most charming and helpful local doctor—fortunately, he spoke French—who fixed the patient up with a bed in his own consulting room in the local hospital, where all the official beds were occupied. We were asked to provide her with an extra nightdress and it was perhaps a little unkind that the best we could do, after scouring the town, was a pale pink creation covered in red spots!

Whatever our original plans may have been, this development meant that we should have to stay at Mostar till the patient recovered and in the end this turned out to be no bad thing. Mostar is one of the older Yugoslavian towns with roots going back to Roman days and a long history of Turkish occupation up to comparatively recent times. As a result a big percentage of the local people are Moslem, the men wearing fezes and tight-fitting knickerbockers, while the women, who are forbidden now by law to wear veils, dress in voluminous skirts of bright coloured material, cut in such a way that they resemble very baggy trousers—as these trouser-skirts are often worn with a blouse and jumper the ultimate effect is unusual but not unattractive. The town is built astride the fast-flowing Neretva and the old part with its mosques, churches and red-roofed houses clustering along the river bank is most picturesque. It is flanked on both sides by high rocky hills supporting a scant vegetation of stunted shrubs.

I see from my diary that 25th May was the first really hot day, and from now on till we left the weather couldn't have been nicer and we got full advantage from our riverside camp. On this particular morning a large dark fritillary flew past me in the town square while we were shopping and I wondered whether it could be *Pandoriana major* Cr. On our way back to camp, I spotted a large butterfly sitting on a thistle head by the roadside, and when it was safely in the net was able to confirm that it was this fritillary. The ♂♂ of this species are almost indistinguishable from ♀♀ of *Argynnis paphia* L. in the markings on the upper side but the ♀♀ are somewhat darker. The under-side, however, is very different as both sexes have a deep pink flush on the forewings. It is a beautiful insect and further examples were seen in the next few days. I had last captured it in Cyrenaica, in North Africa, where it occurs commonly in certain parts of the Jebel and where again it may be taken sitting on thistle heads. In the rough fields near our camp *Pontia daplidice* L. was now flying in numbers and I noticed that a small proportion of the *croceus* ♀♀ were

f. *helice* and some pairs were seen *in cop.* *Colias hyale* L. and *C. australis* Vrtý. were notable absentees and remained so for the whole time we were in Yugoslavia.

As might be expected *Callophrys rubi* L., *Polyommatus icarus* Rott., *Lycaena phlaeas* L., and *Maniola jurtina* L. were present in numbers and on the 26th the first fresh *Issoria lathonia* L. were seen. Other butterflies noted in the area were *Aporia crataegi* L., *dira maera* L., *Melitaea didyma* Esp., *Melitaea cinxia* L. and both the Swallow-tails. Night Herons and Little Bitterns were found inhabiting thick cover on the river bank. We were constantly coming across tortoises of all sizes and I was frequently being told by my wife to stop the car and rescue one from imminent destruction on the road. Snakes, too, were fairly common and were generally seen crossing the road but whether they were poisonous or not we were unable to determine.

It was during the time we were in this camp that we had nightly visits from large green larvae of some insect, not of the order of lepidoptera. They were about two inches long and got into everything, including our beds, and had a nasty habit of climbing up the inside tent walls and then dropping off onto the floor with a resounding plop! What they were I don't know, but we called them the Persistent Pupaters, as their tough cocoons were found in the most unexpected places, including both in my own and my wife's bedding, much to her horror. I have kept several cocoons to try and find out what the insect is, but having spun up they seem to have lost interest and although alive show no signs so far (23rd June) of pupating.

Yugoslavian rivers are often unusual and the Buna was no exception because although it was some forty or fifty yards wide it was only four miles long and we were told the source was worth visiting. On the 28th we took our car to the village of Blagaj and then walked up the valley which leads to the river's beginning. Suddenly, rounding a corner, we were faced with a huge vertical cliff many hundreds of feet high, from a cave at the bottom of which the full-grown river flowed. Alpine Swifts, Rock Pigeons, Jackdaws, Ravens and House Martins were flying in and out of caves on the cliff face, while high in the sky, above it all, three huge Griffon Vultures with a wing span of eight or nine feet soared in unending circles. It was one of the most extraordinary places I have ever seen, and proved in addition most interesting entomologically. The first brood of *Lemenitis anonyma* Lewis was much in evidence and numbers of *Polygonia egra* Cr.—I have never seen it so common—were flying in company with *Polygonia c-album* L., an unusual combination. A dark purple-looking blue was identified as the first brood of *Scolitantides orion* Pall. and a skipper that was new to me was *Reverdinus floccifera* Zeller. Here for the first time I also took *Libythea celtis* Fuessl. It is a very fast flyer and at first glance looks like a fine variety of *c-album*. I noticed it was much attracted to a patch of ground where a horse had recently staled. *Strymon pruni* L. was found nearby sitting about on blackthorn bushes by the river bank. The only *Vanessa atalanta* L. I saw in Yugoslavia were seen here, but *Aglais urticae* L. and *Inachis io* L. were altogether absent and I saw no specimens of either while I was in this country. On the 30th I saw a very fresh *Nymphalis polychloros* L. sunning itself by the river bank while I was fishing. On the 31st *Everes alcetas* Hffmegg. was added to the list of butterflies taken near the camp and on the same day we



saw what we were almost certain was a masked shrike—very like the woodchat shrike but without the brown cap on its head. That evening, I collected a number of the *antiopa* larvae which were now almost full fed and those that survived the subsequent journey in a biscuit tin produced butterflies which emerged in Cologne on 20th and 21st June. Frohawk has described this as one of the most beautiful butterflies in the world and they certainly are lovely creatures.

On 1st June the patient was sufficiently recovered to be allowed out of hospital and, as our time was getting short, we had already decided to split forces and leave our companions free to pursue a more leisurely course homewards.

So on that morning we struck camp and set off down the road which follows the Neretva till we joined the coast at Ploce, as we wished to see that part of it that we hadn't yet covered between this place and Makarska. Somewhere along it we stopped to bathe and eat our lunch, and the only witnesses of our activities were a solitary *podalirius* that patrolled up and down the beach and a constant succession of hornets which visited a fresh water spring. Our destination was Rabac, on the east side of the Istrian peninsular, but because of the state of the roads it took us three days hard travelling to reach there. The first night we spent again at Split and the next at Zadar. Between these two places the road must be one of the worst in Yugoslavia. The coastal road is not yet completed beyond Trogir and so one has to take to the hills where one bumps and crawls along for mile after dusty mile until one can rejoin the coastal road at Biograd from where northwards it is tarmacadamed and excellent going. It was while we were passing through Trogir that we saw the unusual sight of a man with a bear which he had muzzled and led around on a chain. When sufficient spectators had gathered he beat a tambourine and sang songs while the bear, under protest, shuffled about. We were very sorry for the animal which looked miserable but at the same time felt we were witnessing what must now be a most uncommon sight in Europe—an itinerant performing bear.

On the second day we had our lunch near Sibirick and I was interested to find any number of the Hairstreak, *Strymon spini* Schiff., flying about the bushes by the roadside. I also saw several very fresh *Fabriciana niobe* L.; the few I caught were all f. *eris*

We reached Rabac on the afternoon of 3rd June and were relieved to find our old camping area of two years ago in the olive grove unoccupied apart from a very charming Swiss couple. That evening I found a large and magnificent larva of the Spurge Hawk, *D. euphorbiae*, feeding on spurge near our tent. Others were subsequently discovered, and although I am not a moth man, I could not resist the temptation of keeping the two fattest in the hope that when we left they would "go down" before they exhausted their food supply. This, in fact, happened and they pupated safely the day we reached Cologne. By now, too, all the *antiopa* larvae were either suspended for pupation or had already pupated.

We stayed at Rabac till the morning of the 6th, bathing and generally taking things easy. It is a lovely place and as yet unspoilt but the ugly hand of development has got its fingers on it. Two large hotels are nearly completed and water and sanitation are being

brought to the camp site. Very sad, but, no doubt, there are some who will feel that this will improve its amenities! The two commonest butterflies were *Agapetes galathea* L., of which there was a fine dark race and *niobe*, of which, once again, all the specimens I caught were *f. eris*. Several fresh *Argynnis paphia* L. ♂♂ were an interesting discovery, as two years ago specimens of both sexes of this butterfly, in good condition, were on the wing at the end of August and no text-book mentions a second brood.

The local and uncommon little blue, *Everes decolorata* Stgr., was taken, and the first brood of *anonyma* was found to be much more common than it was in the autumn. The blue, *Lycaeides argyrognomon* Bergstr., was added to the list, but *cardui*, *daphidice* and *croceus* were curiously absent in spite of an abundance of their food plants. Another new discovery was that of the hairstreaks, *Strymon ilicis* Esp. and *Thecla quercus* L. flying together in a big area of scrub oak near Labin. Both were in numbers, but it was noticeable that whereas *quercus* stuck to the top of the trees, *ilicis* was satisfied with the lower branches and was that much easier to net.

On the morning of the 6th we were packed up and on the road once more. We made first for Pula and then turned north up the west coast of the peninsular to cover some fresh ground before we finally left the country. From a collecting point of view it became obvious quickly that this west side is a much better bet, offering flat country—much of it covered with scrub oak forest full of open glades—as yet uninterfered with by man.

We stopped the car at one likely looking spot and almost as soon as I got out I found myself looking at a very fresh *Nymphalis xanthomelas* Esp. sunning itself with expanded wings on an oak leaf. Unfortunately it made off before I could net it, but its rich ground colour and white apical blotch left little doubt as to its identity. A very early *Brintesia circe* F. was taken and this, again, was an interesting example of a butterfly with a long emergence period and one which is still very common and fresh in late August. Most of the butterflies I had already seen were present in this area of woodland and, in addition, *Melitaea athalia* Rott., *Coenonympha arcania* L., and *Lysandra bellargus* Rott. were on the wing. It was a lovely place full of flowers and undisturbed, and we dragged ourselves away from it with difficulty. We reached Trieste about lunchtime that same day and, after the usual formalities at the frontier, our trip to Yugoslavia was over.

## Recollections and Realities

By H. SYMES.

Not long ago I was discussing with another entomologist the disappearance of *Papilio machaon* L. from the West Country. He said to me: "You remember the summer of 1816 was a very cold one". I did not, but we will let that pass. "Yes", he said, "it was a very cold summer and proved fatal to *machaon*". His memory must be better than mine, or he must have read Mr. R. F. Bretherton's reference to this fact (*Ent. Rec.*, 63: 210), quoted by Prof. F. Balfour-Browne (*Ent. Rec.*, 70: 35) more recently than I had. It does not seem to be

known for certain whether our West Country swallowtails were *britannicus* or *bigenerata*. Probably those taken on the Dorset chalk hills near Glanville's Wootton were *bigenerata*, but Sedgemoor and the Brue levels west of Glastonbury would have been a very suitable habitat for *britannicus*, and no doubt one of the local Umbelliferae would have provided an acceptable pabulum. The last Somerset specimen of which I have personal knowledge was taken at Castle Cary in 1900, and some years after that my friend, the late W. W. Macmillan, showed it to me in his collection. It was in very poor condition, and I have no idea whether it was *britannicus* or *bigenerata*; in those days I did not even know of the existence of the two subspecies.

The summer of 1879 was an extremely wet one. My memory does not go back that far, either, but I often heard my father refer to it as the wettest summer he could remember. In that year, the late Preb. A. P. Wickham (well known as a cricketer who kept wicket for Oxford and Somerset) had just come down from Oxford and was spending a vacation in the New Forest. Here he took two *Aporia crataegi* L., which he told me were the last specimens taken in the Forest. Frohawk gives 1878 as the date of the last New Forest *crataegi*, and when Wickham had read this he wrote to Frohawk and informed him of his 1879 captures. It seems probable to me that the wet summer of 1879 proved fatal to New Forest *crataegi*, which already must have become extremely scarce. (In an appendix to the *History of the New Forest*, by J. R. Wise, first published in 1862, *A. crataegi* appears in the list of lepidoptera, but without comment as to its rarity or otherwise.)

In the Forest, *Nymphalis polychloros* L. had been a common species until nearly sixty years ago. I certainly saw a number of hibernated specimens at willow flowers along the road from Lyndhurst to Lyndhurst Road station in April 1902, and still have about half a dozen of them in my collection. According to Dr. E. B. Ford (*Butterflies*, 140) it suddenly became very rare in southern England in 1903. Many years later it turned up in numbers in east Kent, where it was very plentiful from 1946 to 1948 (Mr. J. M. Chalmers-Hunt in *Ent. Rec.*, 73: (70)). On 8th June 1948, I found the only larvae of this species that have ever come my way, half a dozen of them feeding on willow. Someone else had already removed a fair sized branch, which doubtless was the home of the main body. Next year *polychloros* became much scarcer. I believe that the butterflies were lured out of hibernation by a very mild spell that lasted through most of February, and were then caught as it were on the wrong foot by a cold snap between 5th and 11th March. From this set-back, the species has not yet recovered.

We have recently experienced two consecutive summers remarkable for heat and drought (1959) and for abnormal rainfall (1960). The cumulative effect of these extremes may well have been deadly to many species.

In his article on rearing *Lysandra coridon* Poda (*Ent. Rec.*, 73: 71-73), Major A. E. Collier notes that owing to the hot weather, an unusually large number of eggs were hatching in October 1959. Not only did all the young larvae die, but many of the remaining eggs failed to hatch after the winter. This is a very interesting and highly significant fact. If it occurred on a similar scale in the wild, it must

have had a disastrous effect on the numbers of the species. *Coridon* was certainly much scarcer at Winspit in 1960 than in most seasons, although in certain localities on the Wiltshire downs it was abundant enough, and there were other reasons that contributed to its scarcity at Winspit. But *coridon* is unlikely to have been the only species affected, and many other young larvae must have perished through their food being dried up in the summer of 1959, while the abnormally wet season that followed can only have carried on the bad work. In any case, a mild damp winter like that of 1960-61 does not suit lepidoptera. This year I have not seen a single *Aglais urticae* L. up to mid June, and only one *Nymphalis io* L. Of the hibernating species, *Gonepteryx rhamni* seems to have fared best; it has been plentiful in the New Forest and east Dorset. Of the spring emergers, I have noticed a scarcity of *Anthocharis cardamines* L. of which I have seen only two specimens.

On 9th June, Brigadier Warry and I visited Cogley Wood, near Bruton, where we had collected together nearly fifty years ago. In those days it was a favourite hunting ground of Somerset entomologists. Nearly two hundred and fifty acres in extent, it ranked in my estimation among woodlands of comparable size of which I had any considerable knowledge as second only to Hell Coppice for the richness of its entomological treasures. It was here that I took my first *Polygonia c-album* L. in 1918, and my last *N. polychloros* in 1920. On another occasion, a perfect specimen of a gynandrous *Argynnis paphia* L. settled at my feet and was duly captured. A less pleasant memory is of a magnificent melanic male *paphia* which I saw resting in the middle of a dense patch of bracken. It nearly took my breath away. I had forced my way through the bracken as quietly as possible to within a yard or two of this lovely insect when it took off and flew away to a tall bramble that had climbed a hazel bush, and settled on a flower about ten feet from the ground. Again I approached cautiously and was in the act of raising my net to strike, when a confounded *Maniola jurtina* L. flew up to the same flower, and drove *paphia* away. I returned to the spot every day for a week, but never saw it again. The Cogley *paphia* were a large race, and every year one or two *valesina* were to be seen. But now everything has changed, and it would be useless to look for *Paphia* in the wood to-day.

To the west of the wood there used to be a rough, rather marshy field full of *Scabiosa succisa* where there was a flourishing colony of *Euphydryas aurinia* Rott., and the odd *Hemaris tityus* L. might be seen at the flowers of bugle (*Ajuga reptans*). There was also a large clump of elecampane (*Inula helenium*), a very local plant which I have not seen anywhere else. All this has been swept away, and the field ploughed up. The western part of the wood, which slopes rather steeply to a small stream, had been cleared and some of it has been replanted with very small conifers, which do not appear to be doing any too well in the stiff clay soil, hard as concrete after the long dry spell. Passing through this open area, we entered a dense jungle of saplings, mostly ash, much too dark to be the home of *paphia* or *euphrosyne*. Here there used to be masses of another botanical rarity, herb Paris (*Paris quadrifolia*). It is quite possible that this shade-loving plant yet survives but we did not see any. After struggling uphill through the tangled undergrowth and only occasionally stumbling across traces of

the cart track that used to traverse the wood, we reached the exact spot for which we had been aiming, as much by luck as by good management. Here we found a few *E. aurinia*, including a female ovipositing. In a field outside the wood there used to be a colony of *Procris statices* L., our main objective, and also *Zygaena filipendulae* L. in large numbers and one day I saw a friend take a very delapidated specimen of the yellow-spotted form, ab. *flava*. The field appeared to be much the same as it used to be, but closer investigation showed that it had been ploughed up in recent years, possibly not for the first time, and there were no signs of *statices* or *filipendulae*. In fact, there were no lepidoptera at all, except a few *M. jurtina* of unloved memory.

We left Cogley, *re infecta*, as the Romans neatly put it, rather earlier in the afternoon than we had intended, and as our route to Upwey passed through Dale country near Glanville's Wootton, we decided to break our journey at a likely spot and have a look round. Two very rough fields that we inspected had plenty of plants in flower, especially the meadow plume thistle (*Cirsium pratense*) and dyer's greenweed (*Genista tinctoria*). There were a good number of *E. aurinia*, mostly worn, and of *Argynnis selene* Schiff. and I was lucky enough to take a fine aberration of the latter, with the black spots and marks very much reduced in number, and what is not always the case with aberrations, in perfect condition.

In the evening, Brig. Warry ran his mercury vapour light. The night was dark and windless, and would have been perfect had it not been so perishing cold. We sat wrapped up like arctic explorers beside the sheet, waiting for moths to arrive, but only fourteen species came, and several of these were singletons. The largest visitor was *Sphinx lugustri* L., and the species in greatest number was *Agrotis exclamationis* L. Next day, 10th June, we visited Hod Hill, but as a persistent drizzle was falling all the time, and it was miserably cold, it was quite impossible to form any opinion as to the scarcity or otherwise of the local lepidoptera. All I saw was two *Polyommatus icarus* Rott. at rest, but horseshoe vetch (*Hippocrepis comosa*) was more noticeable than on my last visit, and from information received, we understood that *Lysandra bellargus* Rott. was out in good numbers. The most interesting thing that I saw was a bee orchis (*Ophrys apifera*) with pure white flowers. Brig. Warry found two *Cucullia umbratica* L. at rest on a wooden post.

## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

**Pammene aurantiana** Staud. and others. Last September Mr. Wakely very kindly sent me a box of sycamore seeds from Box Hill with the information that they probably contained larvae of *Pammene aurantiana* Staud. and *P. regiana* Zell. He also told me that although in the previous year several collectors had gathered these seeds they had failed to breed them except Mr. R. M. Mere and Mr. R. Fairclough. Having previously bred *regiana* and *P. trauniana* Schiff., I guessed that the difficulty lay in keeping the full fed larvae through the winter. I therefore put the seeds into a canvas bag, and each day turned them out and examined them carefully. As I expected, I soon found the

full fed larvae emerging from the seeds and placed them in a tightly fitting tin with pieces of rotten willow wood. The larvae immediately burrowed into these, and when the last had emerged from the seeds and burrowed, I turned the pieces of willow wood into a linen bag and hung them on the bough of a tree in the garden until early May. In all, I saw 14 larvae, 12 large and 2 much smaller. At the beginning of May I brought the pieces of wood into the house and placed them in glass-lidded metal boxes with a piece of wet sponge in each, and forced them in the linen cupboard. In late May I bred 8 *regiana* and in the first fortnight in June, one more *regiana* and two *aurantiana*. As I also bred two large ichneumons, all my larvae were accounted for but one, so the experiment seems to have been fairly successful. I think that the two smaller larvae were probably the two *aurantiana*.

Mr. Mere tells me that from the locality whence my seeds came, he bred a very high percentage of *aurantiana* to *regiana*, and as my two small larvae appeared a couple of days before any of the larger ones, I suspect that most had left my seeds before they were collected.

This rotten punk wood from old willow trunks is very valuable as a pupating medium, particularly for those insects that stay over the winter in the larval stage, though it is equally good for others. I first discovered it at Horning in 1923. I found a full grown larva of *Apatele alni* Linn. when staying there (those were of course the days when *alni* was ALNI). The only previous one I had been lucky enough to get was given a section of bored raspberry stem, as suggested in Tutt's *Practical Hints*, and emerged successfully, but as I could find nothing of the kind at Horning, I gave it a lump of old willow wood from a tree trunk; it almost immediately buried itself in the wood, and I bred a large female in 1924. The ground colour of this insect, which I still have, is a peculiar rusty grey; I have not since seen another of this tinge.

Since then I have used the rotten wood successfully for numbers of insects. All of those I have tried it on bore into it of their own accord, there is no need to make gimlet holes, as is often necessary when using virgin cork. I have used it for *Alispa angustella* Hüb., *Laspeyresia roseticolana* Zell. and *L. funebrana* Treits., as well as in recent years, *Calophasia lunula* Hufn., which shreds the outside and makes an external cocoon. I have also placed it in a sleeve with *Lithophane leautieri* Bois. and found it worked admirably; too frequently, if these larvae are transferred from a sleeve to a breeding cage, they develop virus disease.

**Ptycholomoides aeriferana** H.-S. On 24th June I went to look at my mercury vapour trap at 4 a.m. (this early examination is necessary to thwart the birds) and amongst a number of tortrices sitting in the funnel was one whose shape looked unusual. I boxed it, and on looking at it in the house, found it was a perfect male *aeriferana*. So far as I am aware, this is the first Essex record, but the interesting feature of the capture is that I know of no larches in this district. There are probably a few in gardens somewhere in the town, though certainly none in this immediate neighbourhood, but the nearest plantation of which I am aware is sixteen miles away, near Danbury. There was a south wind blowing at the time, and I suspect that it came, like the *Phycita semirubella* Scop. taken in 1958 by Mr. Dewick and myself, from Kent.

The movements of these apparently sedentary insects interest me more and more. On the night of 21-22 June, there came to the trap a specimen of the large pale buff male of the salt marsh race of *Tortrix viburnana* Fabr. This was accompanied by two *Phalonia affinitana* Doug. and one *Agdistis bennetti* Curt. I take two or three specimens of the last two species in the trap every year, though the nearest piece of salt marsh is nearly three miles as the crow flies.

This very large race of *viburnana*, whose larva is a general feeder on salt marsh plants such as *Aster tripolium* and *Artemisia maritima* is not mentioned in Barrett's account of the species, but is the subject of a note in Tutt's "Practical Hints" (II. 59) where it is suggested that it is probably quite distinct from the moorland *viburnana*. Apparently no one did anything to settle this until 1922, when I took a number on the Iwade saltings near Sittingbourne. I sent some of these to Sheldon, who insisted they were a large dark race of *T. paleana* Hübn. These were, of course, all males. I did not agree, so I sent them to Pierce, who dissected them and proved they were *viburnana*. In the following year I bred the female, which is very large, with pointed reddish-brown wings, and totally unlike that of *paleana*.

**Evtria purdeyi** Durr. A neighbour recently asked me to look over a cabinet of micros that he had purchased ten years ago. He bought the cabinet to contain a collection of horse brasses, but when he got it home, he was so struck by the beauty and arrangement of the specimens that he kept the collection intact. Unfortunately, none are labelled, but I was most interested to find a very long series of *purdeyi* labelled "Bifasciana Haw.". This series had obviously been collected from year to year, and although the last ones were on black pins, the earlier were on the rather large-headed white pins in vogue about 1870-1880. This is, of course, long before the moth was described by Durrant, but other evidence goes to show that *purdeyi* had been an inhabitant of this country long before it was differentiated. Tutt, "Practical Hints" (I. 40) says that blossoms of fir (*Pinus sylvestris*) should be collected in early June for larvae of *Retinia sylvestrana*. The larva of *Evtria* (*Retinia*) *syvestrana* Curt., in my experience, feeds only in the bud, and I have personally never found it in those of *P. sylvestris*. The larva referred to can only be that of *purdeyi*, which feeds on blooms of *P. sylvestris* and *P. austriaca*. Tutt was not alone in this error, however, as in 1922, when I bred *purdeyi* from blossoms of Scotch fir and referred it to Meyrick (the moth is not in Barrett), he named it *syvestrana*. A few years later the late Robert Adkin sent me a specimen of the true *syvestrana* and on my telling him of the difference between it and my own specimens, he sent me a *purdeyi*, which solved the mystery.

**The Cat's Whiskers.** I find to my annoyance that I am at last beginning to run short of the very thin tough tracing paper I use for braces in setting. After the First World War, I had some difficulty in obtaining this, and when a supply came on the market, I bought in 1921 enough, I thought, to last for the rest of my life. I cut this into good sized sheets which I placed between the leaves of "Barrett", an admirable book for this purpose, and when I go on a collecting trip, I subdivide some of these into smaller pieces that will fit into a more portable work; since the last war, it has always been my copy of Donovan's "Macrolepidoptera of Ireland".

Many collectors have different ways of setting, and perhaps the oddest I remember was J. W. Metcalfe's. Metcalfe's micros were always beautifully set, and his method was to take a cat's bristle, set in a piece of cork fixed to a pin, and place it across the wings. It was elastic enough to hold them in place and covered only a small portion of the wing expanse. When the wings were in position, he covered them almost entirely with paper braces and removed the bristles. I asked him how on earth he got the bristles and he told me the following story. The Metcalfe cat departed this life and its remains were buried in the garden. Metcalfe considered this a shocking waste of good material, so that afternoon, when the family had gone out, he dug up the dear deceased, pulled out its whiskers, and re-interred it. The proceeds of this Spilsburyism lasted him the rest of his life.

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As a young man I brought some micros to the late John Hartley Durrant, at the Natural History Museum, for determination, and he rated me very thoroughly for the bad setting, he demonstrated this bristle method, and told me that he would have me thrown out if I brought him such badly set material again. I must say it was a very pleasant method to employ, but somehow I dropped it later on, possibly having the time factor in mind, and I do not seem to have resumed now that I set fewer insects. I must try again.—Ed.

## Notes on Neps. No. II.

By A. G. CAROLSFELD-KRAUSE

**On *Stigmella* "gratiosella" in Great Britain:** In Great Britain, the nomenclator of "*gratiosella*" is most often considered to be Zeller, while the continental lepidopterists have long ago rejected Zeller and consider Stainton as the nomenclator. Neither Zeller nor Stainton is, however, the original nomenclator, but Duponchel, for as early as 1842 he published the name "*gratiosella*" in *Hist. Naturel. d. Lepidopt. ou Papillon d. France, par M. J.-B. Godart, continue par M.P.-A.-J. Duponchel, Suppl aux Tomes Quatrieme et suivant. Paris 1842.* and depicts the ♂ and ♀ in Duponchel, *Lepidopt. Planches, tom. 4, Suppl. 1845, Pl. LXXVII, Figs. 4 and 5* (no title page).

Duponchel's description is based on Fischer von Roeslerstamm in *litt.*, but he does not quote F.v.R.'s MS. This is done, however, by Zeller in *Linnaea Entomologica* III, 1848, while Stainton in *Syst. Catal. of British Tineidae and Pterophoridae*, p. 29, 1849, confines himself to a quotation of Duponchel, 1842, l.c. From this it will appear that all three authors have F.v.R. as their source of the name "*gratiosella*" and that the names of Zeller and Stainton are homonyma and not valid, so Duponchel is the nomenclator of the species, the name of which will be *Stigmella* (*Stigmella*) *gratiosella* Dup. 1842.

So far no problems appear concerning the nomenclature of "*gratiosella*", but attention was called to the fact that Zeller, 1848, l.c. says: "Diese art möchte am besten die Hübnerella Hb. 236, darstellen." and on the authority of Zeller the name of our species was altered by continental lepidopterists, and Hübner considered to be the nomenclator. At first sight this decision seems to be untenable, but it is nevertheless quite correct, which will be made clear by a close study of the said text. As previously mentioned, Zeller quotes the MS. of F.v.R., and he does it obviously fully, but adding his own remarks all over the



MS. A careful reading shows, however, that Zeller's remarks are placed in brackets, and this is the said sentence concerning *Hübnerella*, not in brackets, so it must belong to F.v.R.'s original MS., and then the alteration must be considered valid, and the name of our old "gratiosella" must be changed to *Stigmella* (*Stigmella*) *hybnerella* Hübn. 1796. As it does not appear from Hübner's text that he has named the species in honour of himself, the spelling *hubnerella* is not legal.

It is rather funny that it must have escaped the attention of many British lepidopterists that those who were the first to draw attention to the synonymy mentioned here were the British lepidopterists T. Bainbrigge Fletcher and C. G. Clutterbuck in "*Microlepidoptera of Gloucestershire*, VII" p. 59, in *Proceedings of Cotteswold Club*, 28 (2): 58-66, 1943.

This was one side of the matter, the next being that Wood, unfortunately, made a mess of what was to be understood by the name "gratiosella", vide E.M.M., XXX: 47. Due to the fact that he was obviously not aware of the close likeness between the mines of "gratiosella" and *Stigmella* (*Nepticula*) *ignobilella* Stt. he got the idea that the imagines reared by him from yellow larvae on *Crataegus*, which were neither *Stigmella regiella* H.S. 1855, nor *Stigmella pygmaeella* Haw. 1828, had to be *Stigmella ignobilella* Stt. 1849, so that "gratiosella" as a species seemed doomed.

This mistake was excusable indeed as the only sure way to tell such species apart is by an examination of the genitalia, and such an examination could not be carried out at that time. It is quite incomprehensible, however, that Wood got the odd idea that "the oxyacanthella-like larvae feeding in August" should be the larvae of *gratiosella* in spite of the fact that Stainton expressly said that the larva of "gratiosella" was yellow and that it mined in September and October. That even such an authority as Stainton could make a slip in his memory is quite excusable, but the writer doubts very much that he made two of them! This ought to have made Wood begin to suspect his own judgment, as the larva he considered to be the "gratiosella" larva was green and further "is fed up and over at the end of August". Examinations later on have also proved that Stainton was right and that Wood was wrong. Even more incomprehensible is it, however, that even the most recent British literature still sticks to Wood's wrong point of view, though continental lepidopterists have for many years realised what was the true state of the facts. Now fair is fair, there must be British papers, unfortunately unknown to the writer, in which facts must have been put in their right place, as the figures of genitalia of the species in question in Beirne, 1945 L.C. (writer's first note *antea* 132), figs. 28 and 58 are quite correct.

Now the question remains, to which species does Wood's "gratiosella" belong? From Wood's own words and from Threlfall quoted by Wood, the ovum is preferably placed on the stalk of the leaf, the mine looks like a small *oxyacanthella* mine with brown frass in arcs, and the bluish green larva feeds in July and August. From these facts, there is only one species in question, viz., *Stigmella* (*Stigmella*) *crataegella* Klim. 1936, published in *Stettiner ent. Zeitung*, 97: 200, which species, though an old inhabitant of the British Isles, has to be entered into the lists as a species new to Great Britain.

## A Mercury Vapour Trap at Bishop's Stortford

By CLIFFORD CRAUFURD

Looking through my records for the past nine years, I noted the number of singletons captured in the trap, many of which must have flown a long distance.

On 20th May this year *Aspitates ochrearia* Rossi appeared. I have taken or seen this insect at Southbourne Hants, Amberley Surrey, at Fulbourne and Fleam Dyke and at Tuddenham and Eriswell in the Breck. I know it occurs at Royston, 19 miles from Bishop's Stortford, and the Breck is 42 miles away. I do not know of its occurrence nearer than Royston or Fleam Dyke, but I am not acquainted with much of the country in between.

On 30th September 1960, *Leucania albipuncta* Schiff. arrived and I had it identified at the South London Exhibition meeting. It is a south coast insect, I believe.

On 9th July 1956, there was a *Bomolocha crassalis* Treits. I know this occurs in the ornamental Drive in the New Forest, but though I searched there for it, I was unlucky, and the one in the trap is the first I have seen. I understood several were taken near Birmingham that year and there may have been an immigration.

*Procus literosa* Haw. was captured on 8th August 1959. It occurs on the Breck. *Hyloicus pinastri* L., on 9th July 1956, is also a Breck insect and can be taken at Dunwich and Aldborough. There was one *Eurois occulta* L. on 6th August 1955. I believe a few *occulta* were taken in the south that year.

*Lygephila pastinum* Treits., on 21st July 1955, must have flown a fair distance as it occurs on Newmarket race course, but there may be localities for the insect nearer Bishop's Stortford.

On 27th May 1955 I obtained *Boarmia roboraria* Schiff. and the nearest locality I know is Watton at Stone, about 20 miles from here. When I was a boy it was very common on the oak tree trunks in the New Forest. Perhaps it is still common there.

*Amathes glareosa* Esp. occurred on 14th September 1958. It was fairly common at sugar at Aviemore in 1957 and was taken at the Breck in September 1958 about four days before the one flew into my trap.

The remaining singletons are *Cosymbia annulata* Schulze on 14th May 1956, *C. albipunctata* Hufn. on 31st May 1959, *Colocasia coryli* L. on 1st May 1955, *Cossus cossus* L. on 22nd July 1954, *Lophopteryx cucullina* Schiff. on 16th July 1957, *Nothopteryx polycommata* Schiff. on 29th August 1955, *Amathes stigmatica* Hübn. on 3rd August 1953, and *Philereme transversata* Hufn. on August 9th 1956.

I have seen *annulata* in Sussex, and *albipuncta* and *coryli* at Aviemore. *Cossus* larvae used to be very common here. *Cucullina* is a scarce insect in our neighbourhood. The other insects I am not acquainted with elsewhere.

EARLY APPEARANCE OF OPISTHOGRAPTIS LUTEOLATA L.—Mr. Bretherton in his interesting article (antea 80), mentions the earliest appearance of this species as 22nd April in 1957. A specimen was taken at Box Hill on 16th April this year by Mr. Alan Price at mercury vapour light. Another early record was *Alsophila aescularia* Schiff. which I took off a fence at Kingston this year on 24th January.—F. R. SUTTON, 20 Lyford Road, Wandsworth S.W.18. 24.iv.1961.

# *Opisthograptis luteolata* L., (Lep.) : Some Notes and Amendments referable to the Two Previous Papers (Ent. Rec. 73 : 97-103 and 103-110)

By P. A. DESMOND LANKTREE, F.R.E.S.

## *Errata.*

I. In the proof for the previous paper but one on the species (*Ent. Rec.*, 73 : 97-103), the year 1956 in the Kincaig table of results on page 99 contained two "17 June" date entries, the later of which should have been "27 June". The correction indicated was misunderstood however, and applied to the earlier date, so introducing a second error.

It would therefore be appreciated if the following corrections were applied for 1956 :

for: "27 June 1" read: "17 June 1",  
and for: "17 June 2" read: "27 June 2".

II. In the previous paper (*Ent. Rec.*, 73 : 103-110), the second last paragraph requires correction. The word "close" should be substituted for the word "start" in the two places in which it occurs, the paragraph then reading as follows :

"The expansion and generally later close of the recorded flight-period when there is to be no second brood (1956-57), and considerable contraction and generally earlier close of the first flight-periods when there is (1958-59), was formerly discussed and is clear from the graphs".

## *First Mean Appearance Dates and Latitudinal and Biotopic Differences.*

It will be recalled that the mean dates of first appearance of the species on the wing in three localities were given as :

Kincaig—June 1  
Rothamstead—May 21  
Ottershaw—May 7

The Kincaig mean first appearance was noted (in the earlier of the last two papers, written before the Ottershaw records were seen), to be only 11 days in retard of the mean for Rothamstead, despite the 5° 19' latitudinal difference. The Ottershaw mean, however, puts the Kincaig mean 25 days in retard for 5° 45' difference approximately.

The difference between Rothamstead and Ottershaw in the latitudinal sense is only about 30 miles or approximately 26', yet in mean first appearance of the species, it is 14 days. This might be accounted for in part by biotopic differences between these two localities, but the particular set of records on which the Rothamstead mean was based was for a much smaller number of years than those from Ottershaw. It is not inconceivable that a longer period of records from Rothamstead might show an approach in the mean towards that for the Ottershaw district.

Biotopic differences between Ottershaw and Kincaig are doubtless exceedingly numerous and great. Mr. Bretherton sums up Ottershaw as "a rather sheltered biotope on a light, well-drained soil, with probably almost minimum variations (at least for an inland locality) between lower air-temperatures by day and by night". Climatically, particularly with reference to temperature variation, this contrasts strongly with Dr. C. B. Williams' remarks concerning the Kincaig

biotope in recent correspondence. He states that "Kinraig had a very extreme and severe climate—total temperature range in 5 years from  $-6^{\circ}$  F. up to  $87^{\circ}$ , and one day in June the temperature rose from  $30^{\circ}$  at day-break to  $80^{\circ}$  in the afternoon:  $50^{\circ}$  rise in about 10 hours. The rainfall is low, only 30" per year, for such a mountainous district, and this combined with (at least in the Kinraig area), a very light soil, results in a frequent state of biological drought".

#### *Trap-operation Period at Kinraig.*

Dr. Williams has pointed out to the writer the importance of emphasising the full continuity of the period through which trapping was carried out at Kinraig. As this was not given as completely as it might have been in the earlier paper (*antea*, 97-103), Dr. Williams' relevant remarks are directly quoted here. Of trapping in general in this district he states: "that—with the exception of the first six weeks—my trap worked *every* night—winter and summer—so *every* blank night means that no insect came to a trap that was alight".

#### *Acknowledgment.*

The writer is grateful to those who have supplied information concerning the book previously mentioned (*antea*, 97): "A Few Nature Notes", by Dr. F. R. Elliston Wright of Braunton, Barnstaple, Devon. Its stated first publication in 1926 and revision in 1932 being both private and limited would suffice to account for its apparent absence from some of the larger reference libraries.

## A Family Key to the Pupae of the British Trichoptera

By ALLAN BRINDLE F.R.E.S.

The taxonomy of the pupae of the caddis is usefully allied to that of the larvae. In general the case making caddis larva, prior to pupation, closes the ends of the case with added material and attaches one or both ends of the case to some support in the water. Any character, used to identify the larva, based on the type of case, is therefore still applicable to the pupal stage.

The caddis larvae which are free living (*Rhyacophila*) or net-spinning (Philopotamidae, Hydropsychidae, Polycentropidae) and the tube or tunnel making Psychomyiidae, construct a stony or sandy case on some underwater support, prior to pupation, but this is not complete ventrally, where the silken cocoon around the pupa rests directly against the surface of the support.

This primary distinction of the case making, usually eruciform larva using the larval case for pupation, and the non case-making, campodeiform, larva making an incomplete case for pupation, holds good generally, the more important exceptions, for identification purposes, being mentioned below.

## GENERAL

Before closure of the case the larva may shorten it, by removing the posterior end; this results in the pupal case being rather different in appearance to that of the larva. In *Athripsodes aterrimus*, for example, the larval case is tubular, curved, and tapered posteriorly, whilst the pupal case is almost elliptical in shape, often occurring in numbers together on stones in the water. This difference in shape is accounted for by the shortening of the case and subsequent closure of the ends. The closure of the case may be accomplished by means of membranes across the ends, usually a little way inside (fig. 36) and these membranes are perforated in various ways. In some Phryganeidae and Limnephilidae the perforations are often of almost uniform size and distributed over most of the surface (fig. 38), but in some Sericostomatidae and Leptoceridae the perforations may be only in the centre of the membrane, and sometimes consist of one slit-like opening (fig. 39). The membranes at the anterior and at the posterior ends may be differently constructed and the membranes can also be supplemented by tufts of vegetable material drawn into the ends of the case (fig. 40). In *Odontocerum* and other case-making larvae living in stony streams the case may be closed by a piece of stone (fig. 37). In the Hydroptilidae the cases may be fastened to the support by prominent adhesive discs (fig. 35); otherwise the attachment is shorter but similarly of secretion.

Once the case is attached to the support and the ends closed, the larva undergoes an inactive stage, the prepupal stage, in which the legs are drawn closely to the body, and which may last a few days only or may in certain cases extend to several weeks.

The larvae which do not make a larval case but construct an incomplete case for pupation, may make the case of comparatively large pieces of stone, as in *Rhyacophila*, or the case may be of fine sandy material, as in *Tinodes*. The Psychomyiidae may make their cases inside the wider, later constructed part of their larval tunnel. The genera *Glossosoma* and *Agapetus* (Rhyacophilidae), which as larvae make a distinctive hemispherical stony case, use the case for pupation after removing the ventral flattened side. This pupal case thus corresponds with that of *Rhyacophila*. The pupae are enclosed in a silken cocoon which may be substantial, yellow or brown, in the Rhyacophilidae, or be finer and greyish in the Polycentropidae. In the former family the cocoon is attached to the inside of the case only by its posterior end; in the latter, and the other families of this section, the cocoon is adherent to the inside of the case throughout. The pupal case itself is fragile, and it is difficult to remove it from its support without injuring the pupa inside. Lestage (1921) mentions that larvae of *Holocentropus* (Polycentropidae) may make a pupal case consisting of silk and pond-weed amongst which the larvae have been living.

The pupal stage lasts about two weeks or longer, depending on the temperature. Most pupae lie in the case in the same position as that held by the larvae, but sometimes the position is reversed. The pupa is free and a general resemblance to the adult is at once apparent. The pupal integument is usually colourless and loosely envelops the insect so that the various parts of the adult can clearly be seen. The pupae

which lie enclosed within a complete silken cocoon (Rhyacophilidae, Philopotamidae, Hydroptilidae) lie quietly, but in other families there is an oscillation of the abdomen associated with respiration. The perforated membranes or other material closing the case allows a current of water to pass through the case, and the movement of the abdomen, in a dorsal-lateral plane, maintains this current. The movements also have the effect of keeping the membranes clear of silt and other debris, which might impede the current of water, by the action of the elaborate setae of the pupal labrum on the anterior membrane, and by the processes or setae of the apex of the abdomen on the posterior membrane.

The emergence of the pupa from the pupal case is accomplished by means of the functional mandibles, by which the anterior membrane or other material is removed. The pupa emerges from the case by strong undulatory movements and swims through the water, the thick fringe of setae on the mesothoracic legs assisting the action. The pupa may swim directly to the water surface, the adult emerging and leaving the pupal exuviae floating (*Phryganeu*), or it may swim towards the bank, and climb out of the water on the stem of a rush, or similar support, for the final ecdysis (*Limnephilus*). The emergence of the adult is quickly accomplished the wings being expanded rapidly, but the full colour may not be attained for some little time afterwards.

#### TAXONOMIC CHARACTERS

Apart from the type of larval case, use is made of both pupal and adult characters since the latter are usually readily seen through the pupal integument. The pupal mandibles (figs. 1-20) are often characteristic of a family, being strongly toothed only in the Rhyacophilidae (fig. 15) and Philopotamidae (fig. 19). The mandibles of the Hydropsychidae (fig. 17) possess less prominent teeth. In the rest the teeth are very small or absent. In the Philopotamidae the mandibles are sharply curved near the base, and a similar feature, though not so marked, occurs in the Hydropsychidae. The Psychomyiidae (except *Economus*) (fig. 20), and the Odontoceridae (fig. 4) possess mandibles with a very narrow distal portion, but in the latter species, at all events, the narrow part is often broken off during emergence. The Polycentropidae have distinctive sabre-like mandibles (fig. 16). In most species the mandibles are triangular, more or less elongated, and often with a strongly broadened basal part. The illustrations show the mandibles of certain genera, which, unless otherwise stated, are taken as characteristic of that particular family; the differences within a family are usually not great, e.g. all the Rhyacophilidae have mandibles similar to, but not identical with, *Rhyacophila* (fig. 15).

In the Phryganeidae, a dorsal process occurs on the posterior border of the first abdominal segment projecting well over the second (fig. 22), and Lestage (1921) gives this as a family characteristic, as distinct from the tubercles present in the Limnephilidae (fig. 23). It is not yet certain, however, that all the species of the Phryganeidae possess this process, and the portion of the key which includes this character should be used with this reservation in mind. The process itself is often not very conspicuous.

The apex of the abdomen is sometimes blunt, with two lobes (figs. 24, 28), or it may possess long narrow paired appendages (figs. 21, 25, 26, 27, 29, 34), the latter being associated with the respiratory movements mentioned previously.

There appear to be other characters which could be used, but these have not been studied fully, and are not employed in the key. Such characters would include the pupal labrum, with its often elaborate arrangement of setae, and the hook bearing plates on the abdomen.

Of the adult characters, that of the antennal length is useful in separating the Hydropsychidae, which have very short antennae, and also the Odontoceridae and Leptoceridae in which the antennae are longer than the body. In these two families the tips of the antennae are either curled near to the apex of the abdomen (fig. 29) or curled round the apex of the abdomen (fig. 21).

The spines on the legs are used extensively in adult taxonomy and can be used in the pupal stage; they are also useful in the determination of pupal exuviae together with such features as mandibles. The spines are found on the tibiae and the spine formula is given as three numbers, the first being the number of spines on the anterior tibiae; the second the number on the median tibiae; the third the number on the posterior tibiae. The spines may occur on the distal extremity of the tibiae or about the middle. The spine formula for *Rhyacophila*, for example, is 3.4.4. (figs. 30-32).

The key should be used in conjunction with the larval key previously published (Brindle, 1961), since some characters regarding the larval cases are not repeated. The type of case and the habitats of the families are useful aids to identification, and these have been given in the larval key referred to.

Since the publication of the larval key I have been informed by Mr. J. M. Edington of the Zoological Department, University of Durham, that the larva of *Chimarra marginata* (Philopotamidae) has in fact been described. He hopes to publish a key to species of the larvae of the Philopotamidae and Polycentropidae in the near future. He also kindly drew my attention to a third species of *Wormaldia* (Philopotamidae)—*W. mediana* McLach. which Kimmins recognised in 1953 (*Ann. Mag. nat. Hist. London* (12) 6: 801-808).

A third species of *Triaenodes* (Leptoceridae)—*T. simulans* Tjeder, was omitted from the check list of British Trichoptera in the larval Key. This brings the total number of species to 193.

It has also been noted from larvae collected that occasional *Limnephilus* larvae which construct a case of small pieces of stems arranged transversely, do so very regularly, and an almost square section case results. The portion of the larval key concerned, p. 118, couplet 10, may be amended by replacing "never quadrangular" with "rarely quadrangular". The heads of the particular larvae concerned display the distinctive *Limnephilus* pattern (fig. 38 in the larval key), which alone distinguishes the genus.

A useful morphological paper on the pupae of British Trichoptera is that of Hickin (1949) in which some comparative features are discussed. Lestage (1921) has been used extensively in the preparation of the keys.

There are actually two keys in the present paper:—the first is intended for use when the case and pupa is obtained; the second is intended for use when only the pupal exuviae is obtained.

The single terrestrial caddis, *Enoicyla pusilla* (Burm.), is not included in the keys.

### Key to Pupae

1. Pupae in a complete case, being the larval case which is attached by one or both ends to some support, and with the openings partially blocked with added material ..... 2
- Pupae in a stony or sandy case, hemi-ellipsoidal or elongated in shape, not completely ventrally, fastened to some support ..... 12
2. Pupae small, 5 mm. in *Agraylea*, but usually 3 mm.; antennae very short; spines 0.2.4. or 0.3.4.; no gills; cases of unusual shape, greatly flattened or flask-shaped, etc., often attached to the support with prominent adhesive discs (fig. 35); mandibles with base enlarged, and distal part either long and narrow or broad and short (figs. 1, 2); anal appendages short ..... *Hydroptilidae*
- Pupae larger, 6 mm. or more; antennae longer, usually longer than head and thorax; cases not greatly flattened or flask-shaped ..... 3
3. Antennae much longer than the body, the tips curled near to or around apex of abdomen (figs. 21, 29); anal appendages long ..... 4
- Antennae shorter than body, the tips not curled near to or around apex of abdomen; anal appendages long or short ..... 5
4. Mandibles longer or shorter, gradually narrowing towards tip (fig. 3) not prolonged into a narrow distal portion; tips of antennae curled around apex of abdomen (fig. 21); spines 0.2.2., 1.2.2., or 2.2.2. .... *Leptoceridae*
- Mandibles prolonged into a narrow distal portion (fig. 4); tips of antennae curled near to apex of abdomen (fig. 29); spines 2.4.4. .... *Odontoceridae*
5. Abdomen with broad dorsal process on posterior border of first abdominal segment (fig. 22); anal appendages short; spines 2.4.4.; mandibles curved or straight with a strongly broadened basal part (fig. 5) ..... *Phryganeidae*
- Abdomen with small tubercles (fig. 23) or none; anal appendages long, except in *Lasiocephala* (Lepidostomatinae) ..... 6
6. One or no spines on anterior tibiae; mandibles straight or curved, distal part narrowed, basal part strongly broadened on internal edge (figs. 6-8); anal appendages long, narrow, often diverging at apex (fig. 34); cases of mineral or vegetable material (or snail shells) ..... *Limnephilidae*
- Two spines on anterior tibiae; mandibles usually of an elongated triangular shape, not strongly broadened on basal part except *Brachycentrus* (Brachycentrinae), or broadened on external edge only (Beraeidae); cases of mineral material or secretion, not of vegetable material ..... 7
7. Three spines on posterior tibiae (spines 2.3.3.); anal appendages narrow, curved outwards (fig. 25); mandibles narrow distally, strongly broadened basally on internal edge (fig. 9).....  
*Sericostomatidae* (Brachycentrinae)



- Four spines on posterior tibiae; mandibles not strongly broadened basally or, if so, on external edge only ..... 8
- 8. Two spines on median tibiae; (spines 2.2.4.); cases tubular, smooth, slightly or moderately curved ..... 9
- Four spines on median tibiae (spines 2.4.4.); cases not tubular except *Lasiocephala* (Lepidostomatinae) ..... 10
- 9. Pupae 6 mm.; mandibles with narrow distal part and with base strongly broadened on external edge (fig. 10); cases of mineral material, very smooth, curved, tapered posteriorly; paired tibial spines strongly asymmetrical ..... *Beraeidae*
- Pupae 9 mm. or larger; mandibles elongated, not strongly broadened at base; cases as *Beraeidae* but wider in proportion and not curved so much, nor tapered posteriorly; paired tibial spines symmetrical ..... *Sericostomatidae* (Sericostomatinae)
- 10. Case characteristic, shield shaped; mandibles long, (fig. 12); anal appendages narrow, closely approximated (fig. 26) ..... *Molannidae*
- Case not shield shaped; anal appendages narrow and widely diverging or short ..... 11
- 11. Case characteristic, elliptical with larger stones arranged along each side; mandibles broadly triangular (fig. 13); anal appendages narrow, widely diverging (fig. 27) ..... *Sericostomatidae* (Goerinae)
- Cases usually quadrangular; mandibles narrower (fig. 14); anal appendages short and provided with a few (*Crunoecia*), or many, long setae (fig. 24) ..... *Sericostomatidae* (Lepidostomatinae)
- 12. Pupae in a brown or yellowish strong cocoon which is almost free in the pupal case, attached only by the posterior end; mandibles with a few large teeth (fig. 15); spines 2.4.4., or 3.4.4. .... *Rhyacophilidae*
- Pupae enclosed in a greyish more delicate silken cocoon which is fully adherent to the inside of the pupal case ..... 13
- 13. Pupae with gills ..... 14
- Pupae without gills ..... 15
- 14. Gills filiform, single (fig. 28); mandibles curved and narrow (fig. 16); spines 3.4.4.; anal appendages short ..... *Polycentropidae*
- Gills filiform, in tufts; mandibles broader and with fairly prominent teeth (fig. 17); spines 2.4.4.; anal appendages long ..... *Hydropsychidae*
- 15. Spines 3.4.4.; mandibles short, distal part triangular, basal part extremely broad (fig. 18) ..... *Psychomyiidae* (*Ecnomus*)
- Spines 2.4.4. or 1.4.4.; mandibles otherwise ..... 16
- 16. Mandibles narrow, almost parallel-sided with prominent teeth, curved sharply at base (fig. 19) ..... *Philopotamidae*
- Mandibles narrowly triangular, without prominent teeth, and with a very narrow distal portion (fig. 20) ..... *Psychomyiidae*  
(except *Ecnomus*)

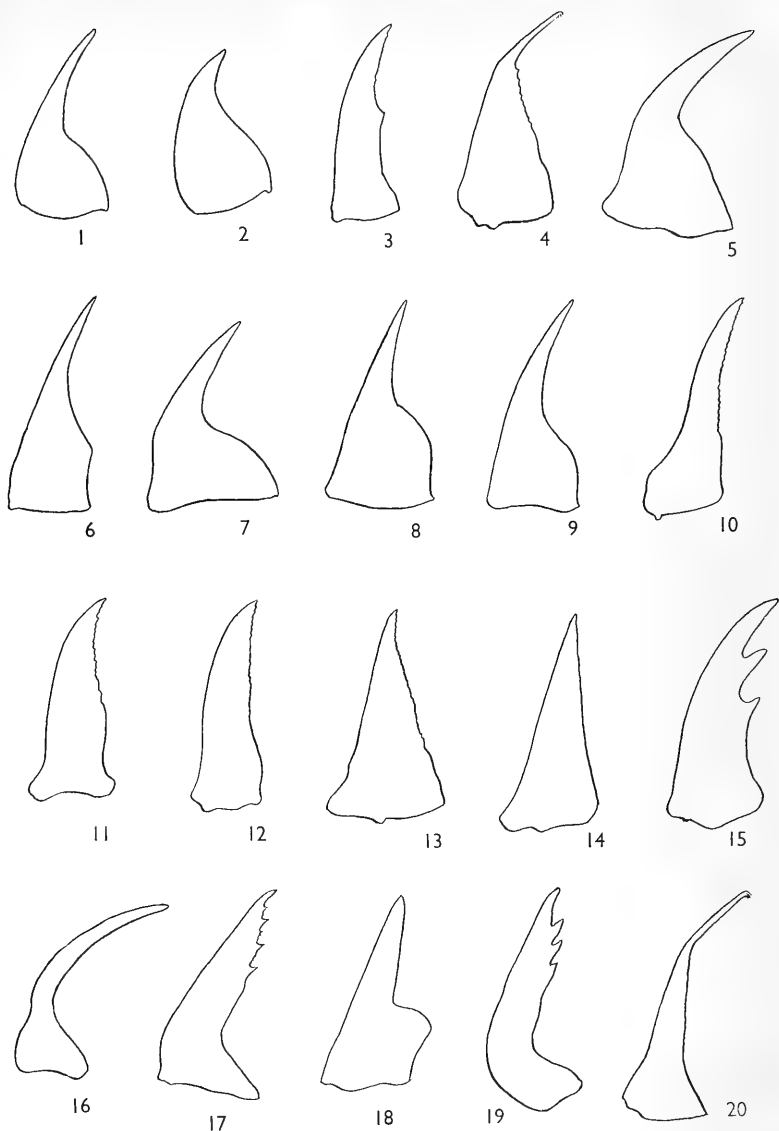
#### Key to pupal exuviae

- 1. Anal appendages short and blunt (figs. 24, 28) ..... 2
- Anal appendages long and narrow (figs. 21, 25, 26, 27, 29, 34) ..... 9
- 2. Pupae small, 5 mm. or less; antennae very short; spines 0.2.4. or 0.3.4. .... *Hydroptilidae*
- Pupae larger, 6 mm. or more; antennae as long as head and thorax; spines 1.4.4.; 2.4.4.; or 3.4.4. .... 3

3. Mandibles with apex produced into a narrow distal part (fig. 20); spines 2.4.4. .... *Psychomyiidae*
- Mandibles without the apex produced into a narrow distal part ..... 4
4. Mandibles with a few very prominent teeth ..... 5
- Mandibles with very small teeth or none ..... 6
5. Mandibles curved sharply near base (fig. 19); spines 1.4.4., or 2.4.4. .... *Philopotamidae*
- Mandibles not curved sharply near base (fig. 15); spines 2.4.4., or 2.4.4. .... *Phryganeidae*
6. Mandibles narrow, curved, sabre-like (fig. 16); spines 3.4.4. .... *Polycentropidae*
- Mandibles not sabre-like ..... 7
7. Mandibles not strongly broadened basally, triangular in shape (fig. 14); spines 2.4.4. .... *Sericostomatidae* (Lepidostomatinae)
- Mandibles strongly broadened basally ..... 8
8. Mandibles with basal part almost quadrangular (fig. 18); spines 3.4.4. .... *Psychomyiidae* (Ecnomus)
- Mandibles with basal part triangular or rounded (fig. 5); spines 2.4.4. .... *Phryganeidae*
9. Antennae longer than the body ..... 10
- Antennae shorter than the body ..... 11
10. Spines 2.4.4. .... *Odontoceridae*
- Spines 0.2.2., 1.2.2., or 2.2.2. .... *Leptoceridae*
11. Mandibles with fairly prominent teeth (fig. 17); spines 2.4.4. .... *Hydropsychidae*
- Mandibles without teeth or with very small ones ..... 12
12. Mandibles strongly broadened basally ..... 13
- Mandibles not strongly broadened basally ..... 15
13. Anal appendages widely diverging (fig. 25); spines 2.3.3. .... *Sericostomatidae* (Brachycentrinae)
- Anal appendages not widely diverging; spines other than 2.3.3. .... 14
14. Mandibles strongly broadened on internal edge (figs. 6-8); one or no spines on front tibiae ..... *Limnephilidae*
- Mandibles strongly broadened on external edge (fig. 10); two spines on front tibiae ..... *Beraeidae*
15. Anal appendages widely diverging (fig. 27); mandibles broadly triangular (fig. 13); spines 2.4.4. .... *Sericostomatidae* (Goerinae)
- Anal appendages not widely diverging; mandibles narrow, almost parallel-sided ..... 16
16. Spines 2.2.4. .... *Sericostomatidae* (Sericostomatinae)
- Spines 2.4.4. .... *Molannidae*

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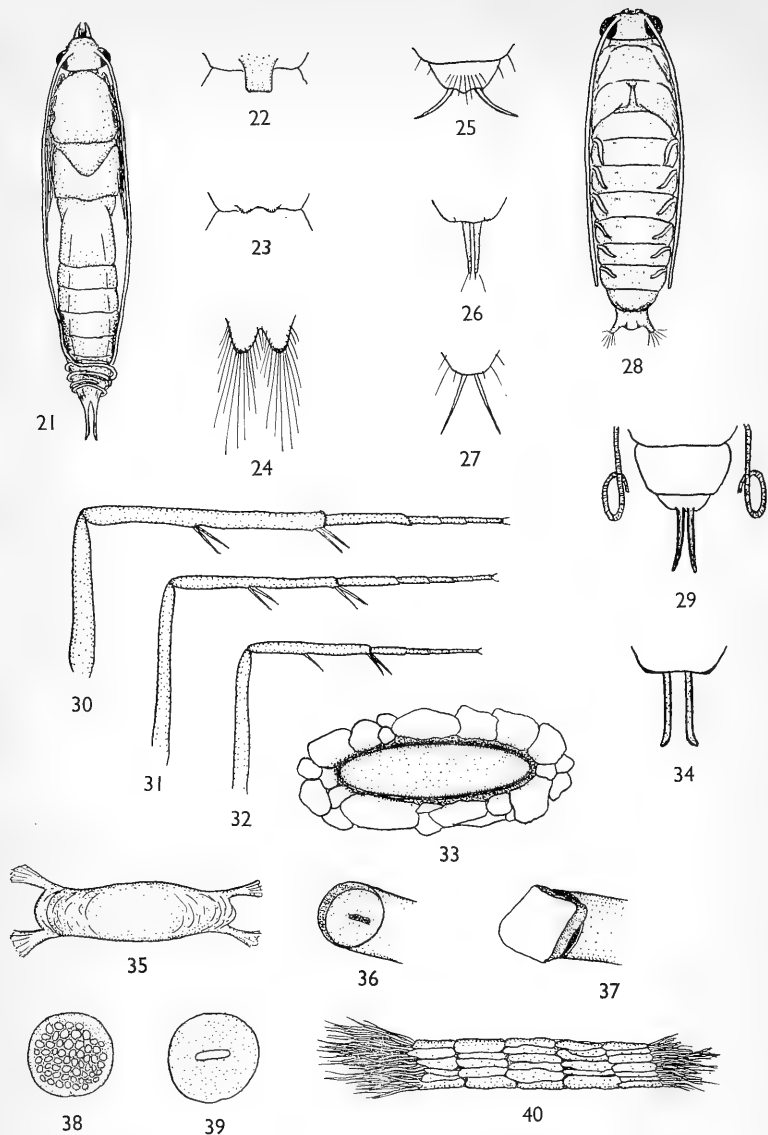
- Brindle, A. 1961. The Larval Taxonomy of the British Trichoptera, I—a Key to families. *Ent. Rec.*, **73**: 114-125.
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- Lestage, J. A. 1921. *In Rousseau, Les larves et nymphes aquatiques des Insectes d'Europe*. Brussels.



Figs. 1-20.—Pupal mandibles of Trichoptera.

1, *Hydroptila*. 2, *Orthotrichia*. 3, *Athripsodes*. 4, *Odontocerum*. 5, *Phryganea*.  
 6, *Limnephilus*. 7, *Ironoquia*. 8, *Stenophylax*. 9, *Brachycentrus*. 10, *Beraea*.  
 11, *Sericostoma*. 12, *Molanna*. 13, *Goera*. 14, *Lepidostoma*. 15, *Rhyacophila*.  
 16, *Polycentropus*. 17, *Hydropsyche*. 18, *Ecnomus*. 19, *Philopotamus*. 20, *Tinodes*.

Figs. 1, 2, 7, 14, 18, after Lestage.



Figs. 21-40. Pupae, etc., of Trichoptera.

21, *Mystacides*, pupa, dorsal. 22, *Phryganea*, process, 1st ab. seg. dorsal. 23, *Limnephilus*, tubercles, 1st ab. seg. dorsal. 24, *Lasiocephala*, anal processes after Lestage. 25, *Brachycentrus*, anal processes after Lestage. 26, *Molanna*, anal processes. 27, *Goera*, anal processes. 28, *Plectronemid*, pupa, dorsal. 29, *Odontocerum*, anal segments, dorsal. 30, 31, 32, posterior, median, and anterior leg, adult, *Rhyacophila*. 33, *Rhyacophila*, pupa and case, ventral. 34, *Anabolia*, anal processes. 35, *Agraytea*, pupal case. 36, *Sericostoma*, anterior end of pupal case. 37, *Odontocerum*, anterior end of pupal case. 38, *Phryganea*, anterior membrane. 39, *Sericostoma*, anterior membrane. 40, *Phryganea*, pupal case.

## Notes and Observations

**COSYMBIA PUPPILLARIA HÜBN. IN SOUTH-EAST ESSEX.**—A short time ago Mr. David More of Hockley brought over a drawer of tortrices for me to check. At one end were a few other insects including half a dozen *Cosymbias*, amongst which I was rather surprised to see a specimen of *C. puppillaria*, taken at light in his garden at Hockley on May 23rd 1956. As it is well known that Mr. More with Messrs. R. M. Mere and E. J. Hare went to Tresco in May 1957 on a search for *puppillaria*, on which two females were taken (one by Mr. More) I should point out that this was the first time he knowingly took the insect, and was unaware that he had captured one in his own garden the year before.

The Hockley *puppillaria* is quite a different form from the two taken on Tresco the following year. They were in ground colour like rather reddish specimens of *C. linearia* Hubn., whilst the Essex one is of a rather dull reddish-brown. The history of the Tresco brood of *puppillaria* is rather peculiar. One of the *linearia* form females laid a quantity of eggs, from part of which Mr. More bred a number of insects and obtained a pairing. He kindly gave me some of these eggs and we each reared about a score of moths. All the F.I. generation reared by Mr. More were of a pale sage green colour, quite unlike any wild specimens I have seen from Britain, or like Blair's Freshwater specimens, one of which I have. I was rather surprised at this, as I had always considered the reddish form as the dominant, but confidently expected it to reappear in the F.2. However, all the F.2. specimens reared by Mr. More and myself (between 30 and 40) were again of the sage green kind. We were unable to carry the race any further, but in the F.3. and F.4. broods reared by Messrs. F. H. Lees and A. Kennard, reddish brown specimens like Mr. More's Essex one appeared. So far as I know, no specimen like the original parent was bred at all, although it is the commonest form in the Scillies. Blair's insects were pale heliotrope in colour.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea, Essex.

**EUCOSMORPHA ALBERSANA HÜBN.—A TORTRICID NEW TO DERBYSHIRE.**—While still sunny at 17.15 G.M.T. on 17th May 1961, after a difficult chase through creeping bramble, bracken, rushes and heaps of charred branches, on a cleared portion of Robin Wood in Stanton-by-Bridge parish, six miles due south of Derby, I succeeded in boxing a rusty bell-moth. It proved to be a fresh *Eucosmorphe albersana* Hübn., a species new to the county list. Its food-plant, honeysuckle abounds throughout this 240-acre wood.—D. C. HULME, 1 Melton Avenue, Little-over, Derby. 24.vi.61.

**EPIBLEMA FOENELLA L. A TORTRICID NEW TO DERBYSHIRE.**—In 1958 Mr. W. Bilbie included *Epiblema foenella* L., without special comment, in his annual full list of Lepidoptera taken in the Chesterfield area. As this species was an addition to the Derbyshire catalogue I asked him for further details. He kindly brought along a box of micros, including five of this unmistakably-marked Tortricid, to a recent

Derbyshire Entomological Society meeting. He told me that this species is fairly common on the grassed-over pit tips known as the Clay Cross Hills. The specimens from this locality that he showed me were dated 9th and 19th July 1958, 5th July 1959, 3rd and 23rd July 1960.—D. C. HULME, 1 Melton Avenue, Littleover, Derby. 24.vi.61.

STRYMONIDIA PRUNI L., in Oxfordshire.—With reference to Mr. Bretherton's letter (antea 126-7), from Professor Poulton's note I was led to believe that E.B.P. had made a *personal* discovery of *pruni* from his enthusiastic reference to capturing this species "for the first time in my life" without any acknowledgment of his introduction to it through anyone else. As for the *first* discovery of the species in Oxfordshire however, I had always accepted Mr. Bretherton's statement that the species was first discovered in the county by Mr. W. F. Burrows, and was therefore, as I told him in my reply, both surprised and sorry that he had read my statement as an "implied correction" of his own, for this was never for a moment intended. As previously stated (antea 96), I did not know the circumstances of E. B. P.'s introduction to the species locally, and indeed his postscript could not have referred to any other than this particular occasion.

However, all is corrected now, and I am very pleased to see Mr. Bretherton's interesting account of this historic occasion in print. The happy note might be added that the original captor, Mr. Burrows, is, I understand from recent accounts, still flourishing in Oxford.—D. LANKTREE, 13 Richmond Road, Oxford.

NOCTUAE IN 1961.—This season to date has been the worst I can remember in more than sixty years collecting, the sallows which were in flower so early seemed to have little attraction for moths, and the most diligent searching for larvae went wholly unrewarded. The garden m.v. trap was equally poor in its captures in numbers, and there was nothing of use until 19th May, when among a dozen or so insects I found a fine and large example of *Leucania vitellina* Hübn., a ♀ which I could not induce to lay. On 23rd May I ran down to Kent, for the purpose of hunting up larvae of *Zenobia subtusa* Schiff., a species that has always eluded me, but long searches among poplar and aspen, at Tenterden, Ham St., Dungeness, Wye, and on the way back round Hawkhurst and Heathfield, all places from which the species has been recorded, produced no *subtusa* larvae. At Ham St. the sallows were hardly at all eaten, the clean appearance of their leaves being very noticeable, and although I did find a fair number of *Zenobia retusa* L. larvae, they were far less plentiful than usually is the case. The aspens were even less productive, *Orthosia populeti* Fab. larvae really rare, and those of *Brephos notha* Hübn. were less plentiful than I had expected. I had intended to run the m.v. lamp at Wye for *Pachetra sagittigera* Hufn. and did not inspect the Crown pit in daylight, but the clear cold and moonlight night, deterred me from trying, especially as I knew an attempt by others on the previous Monday had been unsuccessful. I spent a whole day beating the wych elms along the Hythe canal, but did not get a single larva of *Cirrhia gilvago* Schiff., where I should expect to get as many as I could deal with in a matter of 50 yards, nor did I get larvae of *Tecla w-album* Knoch, in

most years plentiful there. The date may have been on the late side for both species, but I also got no *Cosmia diffinis* L. larvae, the real object of this beating and the date was certainly not late for that species.

I had previously spent a good deal of time round Pulborough looking for larvae *Apatura iris* L., and well searched a dozen localities where in the last thirty years I have found this larva without trouble, if I really tried, but this year I could not even find the tracks of a single larva. It is some years since I looked for it, but I do not think I have forgotten how to find them, they are simply scarce this year. For the last fortnight the number of moths in my trap has been very high with an amazing number of the bigger species, especially the "hawks" but there has appeared nothing of interest to me, only the common species one expects to attract to light in June.

Yesterday (23rd June) I decided to test as to whether this shortage of larvae also applied to the grass feeding species and swept a large area on the Storrington downs, giving special attention to an area of false oat grass, at a spot where *Eremobia ochroleuca* Schiff. larvae are always plentiful in late June, but I could not find them this year, although the area was as it has been this last thirty years, and the grass in prime condition for the feeding larvae of that species—A. J. WIGHTMAN, The Spinney, Pulborough, Sussex.

AN OLD RECORD OF NEPHOPTERYX OBDUCTELLA ZELL.—In the "Record" (Antea, p. 89) Mr. H. C. Huggins gives a short history of this species in England. The first capture being by Sydney Webb in August 1888 near Dover, and the second by W. Purdy in the Warren at Folkestone. It was not recorded again until Mr. Daltry took it at Deal in 1926. About 25 years ago the late W. Fassnidge gave me a lot of duplicates from the A. Sich collection. Among them I found a specimen of *obductella* bearing a label "Folkestone 6.8.06". I have no idea who the captor was.—S. C. S. BROWN, 454 Christchurch Road, Bournemouth. 12.vi.61.

ANTHOCARIS CARDAMINES L. TWO YEARS IN PUPA.—In this magazine, (73, 32-33), I reported the very late emergence of one pupa of *A. cardamines* L. on 1st October 1960, from four larvae found in my garden in 1959.

Though this late emergence of a pupa, kept partly indoors and partly outdoors under near-normal conditions, was rare in itself, more was to follow.

As the three remaining pupae were of normal colour and did not appear to be dead, they were left in the outdoor cage and here they remained over the 1960/1961 winter—the second winter to be passed as pupae.

All three emerged this April as follows:—

12/4/61 a female; with hindwings between the outer and anal angles heavily scaled with black, forming a series of terminal radiations  $\frac{1}{8}$ " long from the outer margin along each vein.

14/4/61 a normal male.

17/4/61 a normal female.

All were of normal size.

It is perhaps appropriate here to mention that all pupae were kept under normal outdoor conditions of temperature and humidity, except during the summer of 1959 and the winter of 1959/60, when they were kept indoors.

It would appear that, in this instance, the occurrence owes little or nothing to environmental influence and, in view of the fact that all four larvae, found close together in my garden, were presumably from the same female, this prolongation of the passiphase period of the pupa was probably the expression of a rare gene inherited from one or other of the parents—presuming it is a dominant characteristic. It could be that the female which laid the four eggs had herself passed two winters in the pupa.

I imagine there can be but very few, if any, records of such delayed emergence and would like to hear from any breeder who has met with similar irregularities in this species.—N. T. EASTON, 146 Castle Hill, Reading, Berks. 23.vi.61.

**HADENA COMPTA FABR. VARIED CORONET.**—In Current Notes (antea 72:251) it was reported that I had obtained 79 pupae of *H. compta* from the Sweet William flower heads in my garden. I gave away 48 pupae to friends and nearly all the remaining pupae have emerged as *compta*. There are two exceptions, both of which are *H. conspersa* Schiff. In his Larval Foodplants, Allan states that in confinement *conspersa* larvae will eat *Dianthus barbatus* (sweet william) and this is now confirmed in that the flower is eaten in the open garden. The *compta* have been emerging between 30th May and 18th June and one or two more should emerge.

This year I have had as yet only one *compta* in my mercury vapour trap: it arrived on 10th June. Previously, the earliest date at the trap was 5th June 1957, and the latest, 1st August 1958. There was one in 1956, one in 1957, two in 1958, eleven in 1959 and thirteen in 1960. The insect is therefore increasing in this district. I shall be pleased if the friends to whom I gave *compta* pupae and who read these notes will advise me whether any *conspersa* emerged among their *compta*.—CLIFFORD CRAUFURD, Denny, Galloway Road, Bishop's Stortford. 19.vi.1961.

**THE LOCATION OF HELL COPPICE.**—In the May 1961, and earlier issues of the *Record*, under the heading "*Strymonidia pruni* L. in Oxfordshire", there is described the discovery of *S. pruni* at Hell Coppice in 1918. May I point out that Hell Coppice is in Buckinghamshire, as will be seen from the current Ordnance Survey map. The county boundary in fact runs along a road between Hell Coppice and Waterperry Wood. Before this was pointed out to them, several entomologists of my acquaintance had assigned to the wrong county, specimens of a wide variety of insects taken at Hell Coppice and adjoining localities. However, patriotic Oxonians will rest secure in the knowledge that *pruni* does occur in at least four separate localities in Oxfordshire, in three of which I have observed it regularly, and sometimes in considerable numbers, over the past thirteen years. Fortunately (for the survival of the species) three of these localities seem to be little frequented by entomologists, and in one of them *pruni* flies in company with *S. w-album* L., a circumstance which may have led to its being overlooked.—R. G. AINLEY, M.A., B.M., B.Ch., 91 Southmoor Road, Oxford. 10.vi.1961.



ADDITIONS TO THE CANNA COLLECTION, MAY 1961.—The first half of May was fine and warm, the latter part of the month miserably cold. Catches in the mercury vapour trap included for the first time specimens of *Colocasia coryli* L. and *Abrostola triplasia* L., the former a far finer looking moth than that figured by South, the latter in very good condition. *Vanessa io* L. has been much more in evidence this spring than for a number of years, *Pyrameis atalanta* L. has been seen a number of times and *Nymphalis cardui* L. and *Plusia gamma* L. once each.—J. L. CAMPBELL, Isle of Canna, Scotland.

EUSTROTIA UNCULA CLERCK IN SURREY.—Whilst traversing the marshy part of a heath at Worplesdon, Surrey, on 6th June I netted a specimen of *Eustrotia uncula* Clerck (the silver hook) in mint condition. This very local little moth is stated by South to have been taken in Surrey at Wisley, which, although in the same part of the county, is a number of miles from Worplesdon.—E. E. JOHNSON, Highfield House, Portsmouth Road, Guildford. 8.vi.1961.

TYPE COLLECTIONS OF DROSOPHILIDAE (DIPTERA). 1 The Strobl Collection. E. B. Basden. (*Beiträge zur Entomologie* 11: 160-224), 1961.

We are informed in the introduction that a series on the old type collections of European Drosophilidae is planned. A high standard is attained in this paper which is in English with brief summaries in German and Russian. The terms used in the descriptions are defined and illustrated with figures of the pteropleuron of *Drosophila funebris* F. and *Stegana stroblii* Mik. Each of the 308 specimens are listed in detail and also considered under each species where descriptions are given with valuable comments based on the author's studies of other collections. Figures of the male and female genitalia are included of *Drosophila nigrosparsa* Str., *D. andalusiaca* Str., *D. nigricolor* Str., *D. unimaculata* Str. and of the male *Microdrosophila zetterstedti* Wheel. and female ovipositor of *Drosophila oldenbergi* Dud. and *Scaptomyza atlantica* Hack.

One new species is added to the British List with the record, figure and photograph of the wing of a specimen of *Drosophila unimaculata* Str. taken at Oswestry, Shrop., 5.ix.1936 by our old contributor Mr. C. H. Wallace Pugh. There are several new synonyms proposed, including changes in the British List. *Protostegana curvipes* Fln. becomes *P. furta* L., *Drosophila forcipata* Collin becomes *D. andalusiaca* Strobl and *Parascaptomyza disticha* Duda becomes *P. pallida* Zett.

A new sub-genus is proposed, *Lordiphosa*, for the *fenestrarum* group of *Drosophila* and the sub-generic characters are described. The species included are *fenestrarum* Fln., *variopicta* Beck, *andalusiaca* Strobl, *hirsuta* Duda, *acuminata* Collin and *basdeni* Wheel.

A useful annotated list of references is added. The two plates show specimens of Strobl's labels and the wings of *D. andalusiaca* and *unimaculata*. Mr. Basden also gives a short biography of Strobl and a history of the Strobl collection.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

LIMONIA NUBECULOSA Mg. (Dipt., Tipulidae) and its breeding habitat.—The late P. A. Buxton, in his paper on flies reared from fungi published Jan. 1961 in *Ent. mon. Mag.* 96 (March 1960) on

p. 70 stated "From *Clictocybe nebularis* collected in November in Gerrards Cross, one emerged in May, 1955; from *Collybia velutipes* collected in December at Wendover, Bucks., one emerged in April, 1955. It is difficult to interpret these specimens, reared from Agarics, having regard to the large number of collections of hose fungi which have been made. The fly is common and widely distributed. If its normal food plant is a fungus, it may be some Agaric not yet investigated".

This species of *Limonia* has obviously adapted itself to various breeding habitats and thus been able to become 'common and widely distributed.'

I found a pupa with the adult fly emerging, partly extruded from a rotten log in Epping Forest, Essex, 25th August, 1946. Dr. C. P. Alexander in "The Crane-Flies of New York", 1920, recorded the larvae in humus beneath leaves and G. Crisp and Dr. Ll. Lloyd in 'The Community of Insects in a patch of Woodland Mud' 1954, *Trans. R. ent. Soc. Lond.* **105** speak of the species breeding in the woodland mud.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

## Current Literature

*Spiders, Scorpions and Men*, by Theodore H. Savory, M.A., F.Z.S. University of London Press Ltd. 30/-. From time to time we have been able to read in the entomological periodicals, fascinating accounts of entomological studies in the early days of civilisation, through the middle ages and up to the days of Carl Linnaeus and his immediate successors. Such accounts are usually of a patchwork nature as one would expect, having in mind the amount of matter covered in a short article. Such accounts are always interesting, instructive and entertaining. The book under consideration, however, is of a size to permit of the subject being treated reasonably fully, and it is divided into chapters dealing with all aspects of the science of Arachnology; it is well organized, bringing us by stages from the days of ancient Egypt and Greece, when both scientific study and superstition held sway, through the dark and middle ages when scientific study declined almost to vanishing point, though superstition survived, to the days of Linnaeus, when science showed signs of a vigorous revival, and on to the present day in many countries. The matter is well ordered and it is interesting throughout. The major portion deals with the arachnologists of modern times in chapters covering geographical areas, and also notable periods of time.

The plates cover a range of subjects from old prints of mythological interest and of early conceptions of spiders to photographs of arachnologists, with a series of drawings of spiders by B. Goater, and outline maps with the geographical chapters, marking the home areas of the various arachnologists mentioned.—S. N. A. J.

*Lambillionia*, **60**, Nos. 9-10, October 1960. This number opens with the obituary notice of Abel Dufrane, followed by a note by E. Janmouille adding *Dichomeris limosellus* Schlag. to the Belgian list. Dr. M. Fontaine writes on the possibility of natural hybrids between *Colias hyale* L. and *C. australis* Verity. J. P. Betz discusses the possibility

of *Parnassius apollo* L. occurring in the Ardennes, while L. Scarlet continues his descriptions of the ova of Belgian lepidoptera. E. de Laever notes some interesting captures in France and E. Janmouille continues his notes on some new and little-known species in Belgium.—S. N. A. J.

*Zeitschrift der Wiener Entomologischen Gesellschaft*, 45, 3-4 (April 1960). Otto Flick writes on *Pyrausta palustralis* Hbn., Leo Sheljuzhko concludes a long article on the knowledge of the *Pieris melete* Men. group, with half tone blocks of the upper and undersides and a synonymy of the species concerned. Dr. Franz Kudernatsch notes a further capture of *Sedina buettneri* Hg. in the Burgenland, while Hans Reisser writes a long article on *Hyphantria cunea* Drury in Europe, known as the American spinning bear, with a bibliography of 21 items.

5-6 (June 1960) opens with an article on *Sidemia zollikoferri* Frey. in the Alps. Charles Boursin writes on *Scotia (Agrotis) schawerdai* Byt.-Salz as a species new to Spain with a plate of imagines and of male genitalia, and Joseph Soffner on species in his favourite Reisengebirge, with a plate figuring *Evetria turionana* Hb. var. *mughiana* Zell., five figures of *Crambus maculalis* Zell., and one of *C. permutatellus* H.-S., and another giving genitalia of *E. turionana* var. *mughiana*, and *C. permutatellus*. Klaus Sattler writes on the identity of *Gelechia trauniella* Zell., 1868, and figures the genitalia.

7-10 (October 1960). Rudolf Pinker starts an article on new and interesting lepidoptera of the Canaries with text figures; Walter Forster continues his work on the genus *Agrodiaetus* Scudd. of the Lycaenidae with six plates illustrating the species.

11 (November 1960) opens with an article on the variation of the female of *Pieris bryoniae* O. with two plates and a text figure, and Wolfgang Glasser writes on the first instar of *Heterographis oblitellu* Zell., a species of considerable interest to British lepidopterists.

12 (December 1960) starts with an account of the international Entomological Congress at Vienna, 17-25th August 1960, by Georg Warnecke. Stanislaw Bleszynski writes on *Crambus lithargyrellus* var. *domariellus* Rebel, and a new species from the Balkans, with a plate and genitalia dissections. Jacques Aubert supplements his note on the Geometrid genus *Entephria* with a plate. F. Kasy writes on three new *Acptilia* species with a seven figure plate and genitalia dissections. The volume finishes with a figure of the "Kongresinsekt", a new Staphylinid beetle discovered during one of the outings.—S. N. A. J.

*Western Butterflies*, by Arthur C. Smith. Lane Book Company, Menlo Park, California. \$2.95. This is a book for juvenile beginners, but it has the advantage of being written by a professor of biological science, and is therefore one which handles the matter in an instructive manner likely to sow fertile seed in the reader's mind. It is illustrated with watercolour sketches of the species shown in their favourite surroundings, and are by Gene M. Christman. The first pages deal with such matters as what a butterfly is, its general anatomy, its life-cycle, and its behaviour. The following pages deal with eleven different biotopes and the insects to be found in each, mentioning also insects that are to be found everywhere. There follow notes on collecting, raising larvae, setting, labelling, papering and elementary storage of

specimens. With improving travel facilities, it may well be that some of our young collectors may be making the journey, and this book could well find a place in their armoury.—S. N. A. J.

*Insect Sounds*, by P. T. Haskell, Ph.D. H. F. & G. Witherby Ltd., London. 30/-. It is pointed out in the first chapter that while man has noted the fact that insects produce sounds, over more than one thousand years, and method and reason have been discussed on and off throughout the years, it is only in the past twenty years or so that real progress has been made. The present work now gives a general picture of the results of the investigation of the phenomenon, giving ample references to detailed papers at the end of each chapter. It would seem to be the first time such a thing has been attempted, and it is intended to offer suggestions as to the various lines that could be taken by research workers. The development of tape-recording techniques may be considered as the turning point in the study of the production of sounds produced by insects, as they have brought within the range of human hearing sounds made by insects hitherto unsuspected of stridulation. The first chapter naturally serves as the more conventional Introduction, and deals with definitions, problems and the uses of various forms of apparatus. The second chapter deals with the production of sounds and the third, the hearing by insects of these sounds. The fourth and fifth chapters deal with song and behaviour patterns associated with sound. Chapter six deals with physiological aspects of acoustic behaviour, and Chapter seven puts sound behaviour patterns into their place in the insect world. There are many text figures of various stridulatory and auditory organs of insects, and there are many half tone plates of sound wave films, and an interesting film sequence shows the movement of the elytra of *Ephippiger bitterensis*. This book should be a welcome addition to the library of anyone, amateur or professional, interested in the study of any aspect of insect sounds.—S. N. A. J.

## Current Notes

### ASKHAM BOG

By an exchange of letters the Nature Conservancy and the Yorkshire Naturalists' Trust have entered into an informal agreement to conserve Askham Bog. This famous area, near York, is a 100-acre remnant of a swamp which must at one time have covered much of the Vale of York. Now almost wholly covered by a thicket of Birch, Oak, and Alder, the Bog illustrates the later stages in the succession from open fen to woodland. The ground vegetation includes many bog and fen species uncommon in Yorkshire, among them the rare Royal Fern. Associated with this flora is a rich variety of insects, particularly beetles.

The land is partly owned and partly leased by the Yorkshire Naturalists' Trust which manage it as a nature reserve. The Nature Conservancy regard the Bog as of equal scientific importance with their declared National Nature Reserves and are, therefore, equally concerned

for its protection and conservation. At present it is managed successfully with due regard to the scientific interest and, accordingly, they do not feel it necessary to acquire a direct interest in the Bog or to declare it as a National Nature Reserve.

Askham Bog will continue to be managed by the Yorkshire Naturalists' Trust, advice from the Nature Conservancy being available when necessary. Wardening is in the hands of the Yorkshire Naturalists' Trust and permits to visit the site or undertake research there must be obtained from the Chairman of the Management Committee: Mr. C. J. Smith, 7 Malton Way, Clifton, York. The Nature Conservancy, 19 Belgrave Square, London, S.W.1. 17.vi.61.

## AN APPEAL

*The Entomologist's Record* is a non-profitmaking publication produced by entomologists on behalf of entomologists. It can only keep alive if the subscribers themselves send articles to the Editor covering the particular subject on which they are working, or notes of general interest to readers. I have received criticism of the paucity of material in the June issue, but the critics are not contributing anything themselves. I wish to impress on subscribers that the "Record" is their journal, and it is incumbent on them to use the journal to increase their own and other people's knowledge and pleasure.

Large numbers of subscribers use a mercury vapour trap, but comparatively few write to the journal regarding their unusual captures, and I am sure nearly everyone with a trap obtains insects which are rare in his district, and also notes in his records the increase or decrease of certain insects. The decrease of insects is of great interest at the present time when the poisonous spraying of plants and insects is increasing. This year butterflies are very scarce in this district, sufficiently so to cause comment from even my non-entomological friends.

A little help is worth a lot of criticism, so please send to the Editor an account of your holiday this year, and do not forget that many of your fellow subscribers are general naturalists, interested in trees, plants, birds and scenery which you may have seen. These holiday notes are of great interest to other subscribers, and I am sure that in the past, notes written on the subject of insects taken in the Breck district, the New Forest, Aviemore or on the Broads have led to many collectors trying a district new to them with enjoyable results.

I appeal to entomologists to write now their notes and observations if only for the benefit of naturalists who come after us, as in a few years time there will be very few butterflies or moths to write about as they will have been sprayed out of existence.—CLIFFORD CRAUFURD, Treasurer. 29.vi.61.

I would like to thank those contributors who have come to the rescue with matter for the present number, and I would beg them and all our readers not to consider the matter as a passing crisis. No sooner is one issue away to the printer than I have to think of getting together matter for the following number, so please remember, the demand is always with us!—ED.

## Obituary

WALTER DOUGLAS HINCKS was born in Melton Mowbray in 1906, the only child of Mr. and Mrs. W. J. Hincks, and moved to Leeds whilst still in his 'teens. Entering the Leeds College of Pharmacy, he took his M.P.S. final successfully at the early age of 21 and entered the service of a large firm of Manufacturing Chemists in which he rapidly rose to a position of responsibility.

Always interested in insects, Douglas joined the Leeds Naturalists' Club and devoted his spare time as a boy to the study of all Orders of insects, and the Coleoptera in particular were rapidly mastered. Developing a close friendship with John R. Dibb, another enthusiast of his own age, a decision was made to examine some little known group of beetles and test their ability to undertake original research. The Passalidae were chosen and letters were sent all over the world asking for material. In a remarkably short time Hincks and Dibb issued a fine series of papers that established them as the world authorities on this hitherto little known family. In the meantime they amassed one of the largest private collections of foreign beetles in Great Britain and successfully determined a large proportion of the species in spite of the limited library facilities at their disposal. A large section of these vast collections was presented to Leeds Museum during the war and only a few weeks later was largely destroyed during an air raid.

Simultaneously Hincks was mastering the Orthoptera, writing good papers on the Chironomidae and other Diptera, investigating difficult groups like the Cassidae and Halticine beetles and becoming ever more attracted by the Hymenoptera Parasitica.

In 1932 he married Jessie, daughter of Dr. R. H. Hargrave, the well-known Church organist of Leeds, and throughout his brilliant career he enjoyed the understanding of his ambitions and the selfless devotion of his wife, without whom his progress would have been greatly handicapped.

By this time Hincks was building up his entomological library by an interchange of papers with specialists throughout the world and by purchase, at the same time receiving large quantities of foreign insects for determination from an ever-increasing circle of friends. A fellow or member of many Societies, he later held office as President or Council Member of the Yorkshire and the North Western Naturalists' Unions, to which he gave excellent service in every way, the Manchester Entomological Society and several local Societies whose members all benefitted from his help. A Fellow of the Royal Entomological Society of London, in which he served a term of office as Vice-President; President and Council Member of the Society for British Entomology, and later a Member of the Council of the British Trust for Entomology Ltd. Hincks played a most important rôle in the organisations devoted to the promotion of Entomological knowledge.

It was at the 1939 Congress of the Society for British Entomology that he met the writer for the first time, when the latter was exhibiting the manuscript of a Check List of British Insects then in course of preparation with a view to ultimate publication. In March 1942 he wrote to say that he had just finished a work for the Musée de Belge on Insects of the Belgian Congo and would like to volunteer to help in the completion of the Check List which he regarded as a major necessity. A meeting was arranged at Wilmslow, complete agreement on all points was reached and the team of Kloet and Hincks came into being. It was now possible to enlarge the scope and improve the format of the intended work. The 24 volumes of manuscript were completely rewritten and the work was published in December 1945. It may here be stated that a second edition of this work was started some twelve months ago but will not now be continued.

Whilst engaged upon the Check List, Hincks found time to arrange the Entomological collections of the York Museum and to undertake the difficult task of examining the contents of the crops of Rooks for the Rook Survey carried out by James Fisher under the sponsorship of the Agricultural Research Council. Each crop contained some undigested fragments of insects, many of which had started to disintegrate or to lose their finer detail, and it is doubtful whether any other entomologist could have accomplished the excellent result that was handed over by this great man.

Deeply interested in Mycology, in which his wife shared his enthusiasm, and in Botany, Hincks now started in earnest to study the Dermaptera—now separated from the Orthoptera as a separate Order. In close touch with Dr. Malcolm Burr and other authorities, he realised that here lay the greatest scope for research and a task that would test to the utmost his skill as a systematist and taxonomist and exercise his talent for the investigation of nomenclature and synonymy. It is rare indeed to find a man capable of all these approaches, yet Hincks was undoubtedly master of them all.

Inevitably the day arrived when his marked talents found the recognition they so richly deserved, and in 1947 he abandoned pharmacy, pulled up his roots in Leeds and moved to Stockport, having accepted the appointment of Keeper of Entomology at the Manchester Museum. Here was paradise in the form of work he had wanted all his life, a vast array of collections of all Orders from all parts of the world, the backing of the Manchester University and use of their magnificent Library. With the aid of his assistant Stanley Shaw, and later Alan Brindle, the rearrangement and combination of these collections was commenced with the object of making the Museum's Entomology Department the finest reference and study centre in the North. In the Coleoptera alone one might mention collections by Sidebotham, Kidson-Taylor, Britten and Hincks! He also acquired for the Museum the famous Spaeth world collection of Cassidae and the fine collections of J. Ray-Hardy, R. W. Lloyd, and many others. The task was well under way when he died and his followers will have little difficulty in following his programme to completion.

Walter Douglas Hincks obtained his Master and Doctor of Science Degrees at the Manchester University in whose precincts so much of his finest work was done, and was rapidly elected to the Fellowship of the Museums Association.

Hincks was now able to attend International Congresses at which he became a well-known figure, and a wealth of material flowed into the Manchester Museum from all over the world. He wrote the *Handbook on the British Orthoptera* for the Royal Entomological Society's series, and became Editor of the *Catalogus Coleoptorum*, published by Junk, being engaged on this work until the end. Trips to Milan and elsewhere to study types of Earwigs were all taken in his stride as he commenced the four volume monograph of *Dermaptera of the World*. The first two volumes were published by the British Museum and the third was about half written when Hincks began to sicken with what was to be his first and last illness. Gradually this wonderful entomologist was brought to a halt. His intended translation and editing of the Spaeth MSS. on Cassidae, his insect surveys of Spurn and Malham Tarn, his W.E.A. Classes on Garden Insects, his papers on new Fairy Flies, his discovery of thousands of species of insects new to science, his fight for the preservation of Askham Bog and other Entomological preserves, his interest in Mycology—shared by his wife—his botanical work and all of his many other interests were to know him no more, and on 12th July 1961 Hincks passed away after bearing with fortitude his fatal illness at the very peak of his manhood and the apex of his outstandingly brilliant career.

The museums of the world lie enriched by the numerous insects in their collections bearing the famous 'Det. W. D. Hincks' label, and the burden of all entomologists has been eased by his many fine publications. By the age of 54 he had become worthy of remembrance along with John Curtis, James Francis Stephens, A. H. Haliday, W. F. Kirby, W. J. Lucas and those others whose work has for all time stamped them as England's greatest Entomologists.

On the 14th July, after a service at Mirfield Parish Church conducted by his brother-in-law, the Rev. E. H. Hargrave, Vicar of Mirfield, he was cremated at Lawnswood Crematorium, Leeds.

We shall not again know so great an entomologist, nor will the writer ever know so great a friend. In extending our sympathy to his wife let us publish our deep gratitude to her for the way in which she smoothed the path of his endeavour, encouraged him and helped him, and so bravely nursed him through the last few tragic months.

G. S. KLOET.



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## THE MACROLEPIDOPTERA OF THE WORLD

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# THE ENTOMOLOGIST'S RECORD

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# The Canary Islands and Central Spain

(March to April 1961)

By C. G. M. DE WORMS, M.A., Ph.D., F.R.E.S.

All those who have had the opportunity to collect in the Canary Islands should indeed be very indebted to Dr. Charles Goodall for his excellent account (*Ent. Record.*, 73: 29) of his brief visit to Teneriffe in October 1960. It is most unfortunate that apparently nothing has appeared in our literature in recent times on the lepidoptera of these delightful Islands, though they have had numerous visits from collectors. The last really concise account seems to be that of G. H. Gurney (1928, *Entom.*, 64: 1 seq.), though there have been a few papers in intervening years on their lepidoptera in foreign journals.

My object of giving an account of my recent visit is as a supplement to that of Dr. Goodall, especially as I was able to spend appreciably longer there and also to comment on some of Gurney's remarks as well as his nomenclature and descriptions of species. The last word has by no means been said on the lepidoptera of this region, limited though it might seem and modern methods, such as the use of mercury vapour light, would no doubt add a great deal to the knowledge of the insect fauna, as there must still be any number of species of moths yet to be discovered there.

Setting out from London Airport on 28th March after a delay in Madrid, our plane touched down on Teneriffe at 3 a.m. local time on the 29th, and a 17-mile drive through the night along the coast landed me at Puerto de la Cruz, which was also Dr. Goodall's headquarters. He has given a very good and detailed summary of the various zones on this fine volcanic island dominated by the great peak of Mt. Teide. During my fortnight's stay on Teneriffe the weather was very warm and with a very equable temperature of between 70° and 80° F. daily. As is so often the case in these hot climates, the morning is the best period for collecting, since the afternoons were often overcast.

I set out on the hunt early on the 29th, and it did not take me long to find the spot mentioned by Dr. Goodall as the headquarters of *Danaus plexippus* L. by the bridge taking the main road over the Martianez Barranco. They were fluttering round their foodplant, the Lantana, *Asclepius curvassavica*, which did not grow more than 2 ft. high and had small orange flowers which were very attractive to these fine insects, and a few days later on a sizeable patch of this small shrub I found the larvae, all apparently of *D. plexippus* L., in all sizes and subsequently bred several large specimens from them. This spot by the bridge was my venue most mornings from about 10.30 to 12.30 p.m., when the sun was nearly always at its best. On each occasion, *D. plexippus* L. was sailing in all directions on the edge of the barranco, and on the 31st they were accompanied by a few very worn *D. chrysippus* L., but no larvae of these were forthcoming. They are very similar to those of *plexippus*, but have extra thin extended processes about the middle of the body. This small area alongside this barranco yielded many other interesting butterflies. The local form of *Pieris rapae* L. was everywhere, while *Pontia daplidice* L. was skimming at speed over some bare ground by the side of the main road. On the 30th, *Pararge xiphioides* Staud. was flitting in shady spots on the

edge of the banana plantations, while a fine patch of the local thistle harboured several *Pyrameis atalanta* L. and *P. callirhoë* Hbn. which proved to be far the commoner of these two red admirals and was later to be seen in most of the public gardens and also the well-known Botanic Gardens a little way up the road from the Martianeze barranco.

In a small garden with nasturtiums on the way to this favoured spot I noticed some *Pieris* larvae crawling up a wall to pupate, and also some pupae in situ which I eventually obtained and bred into specimens of that grand insect *Pieris cheiranthi* Hbn. which can virtually be regarded as a species separate from *P. brassicae* L. On 3rd April, I first saw the females of this impressive butterfly on the wing in gardens at Puerto and also in the banana groves bordering the Martianeze barranco, but both sexes were commonest on the slopes of the Taoro Hotel on the afternoon of the 7th. The other insect of interest in this area was the small blue *Zizera lysimon* Hbn. which nearly always seemed to hug the ground and was by no means easy to see or catch. It could also be found on flowers in the public gardens. During my fortnight I made several expeditions further afield, mainly by the very good 'bus service. I went twice up the five mile tortuous road to Orotava where the small allotments to the north of the town were a good hunting ground. The afternoon of 29th March provided many fine *P. xiphioides* Staud., while in a small corner where lupins and the wild gladiolus were growing *Lampides boeticus* L. was flitting in numbers in both sexes together with a few *Z. lysimon* Hbn. *Colias croceus* Fourc. was also much in evidence and there was an occasional *P. atalanta* L. and *P. cardui* L.

On a further visit to this spot on 3rd April I saw, in addition to the above, species the first *Adopaea christi* Rebel, a small Skipper referred to by Gurney as *A. acteon* Rott., but peculiar to these islands and the only representative among the Hesperidae. The little Noctuid *Galgula partita* Guen. was very active, as also was *Hypena lividalis* Hbn., especially in bracken-covered areas. The afternoon of 1st April I travelled the 26 miles by 'bus to Buenovista at the extreme western tip of the Teneriffe. The journey along the northern coast skirted some fine rugged scenery and also passed the town of Icod where the famous dragon tree, reputed to be well over 1,000 years old, was clearly visible. Buenovista itself is at the foot of some very wild-looking mountain country, but the only butterflies seen in quantity were *P. rapae* L. and *P. daphnice* L. On the 4th I made a still more extensive all-day excursion to the highest part of the island. An excellent small 'bus took eight of us up the winding mountain road, first through the fir forest zone, then among the tree heaths where *Erica arborea* was just coming into bloom and it looked as if the bushes were covered with snow, so white were the small flowers. About mid-day we reached the entrance to the really volcanic area at over 8,000 ft. with the 12,000 ft. peak of Mt. Teide towering in the background, a most awesome sight. Our lunch-time halt was at the parador mentioned by Dr. Goodall, but when the sun came out the only butterflies I saw at this altitude were *Pieris rapae* L., *Pyrameis atalanta* L., *P. cardui* L., and *P. callirhoë* Hbn. A most careful search among the flowers in the small garden failed to yield any of the Blue peculiar to the Islands, *Cyclurius rebbianus* Brullé which he took in numbers at this spot the previous October,



though Rebel in 1898 mentions its occurrence at this high altitude where the only leguminous foodplant seemed to be the large round broom bushes in the vicinity with jagged landscape around reminding one of almost a lunar vision. The return journey was made along the large backbone of the island, a very impressive ridge at about 7,000 ft. from which several of the surrounding islands were clearly visible. We made a steady descent through the famous Esperanza Forest to La Laguna, the old capital at the eastern end of Tenerife, and then along the 20 miles of winding coast road back to Puerto in the evening.

On 8th April I travelled once more by 'bus to La Laguna, thence up towards the Mercedes valley, a most attractive area with large down-like hills at the more easterly portion which was covered with thick fir and cedar forest. While there I experienced the only shower of rain during my whole sojourn in Tenerife, but as soon as the skies cleared butterflies appeared in plenty, in fact in one field of a white crucifer I do not think I have ever seen so many *Pieris rapae* L., almost giving the appearance of dancing snowflakes. *Lampides boeticus* L. was especially common in this locality among the everlasting peas, as also was the large form of *Heodes phloeas* L., and I also caught a fine female of *Aricia cramera* Eschsch., which Gurney calls *A. medon*, but has more orange spotting. While I was in this field bordering the road one of a group of three men walking from the nearby small hotel suddenly came towards me and asked in French if I was collecting butterflies. He turned out to be Senor Ramon Morales, the leading authority on the local lepidoptera. He said how sorry he was not to have met me sooner so that he could have shown me some of the best localities. However, he invited me to visit him and his colleague, Senor Fernandez, in the capital, Santa Cruz, of 80,000 inhabitants, where I went over to see them on the 10th, and they showed me a representative collection of the butterflies and many of the moths of Tenerife. Before visiting them I surveyed the hilly country at the back of the city, but once more *P. daplidice* was the chief inhabitant, though the garden of the Pino de Oro Hotel harboured many *P. xiphioides*, and I also found a small larva of *Acherontia atropos* L. on a solanum bush. During my time on Tenerife I had searched in vain for the Brimstone, *Gonepteryx cleobule* Hbn., only known from this and the small adjoining islands. On the 11th, when driving by 'bus to the air port at La Laguna, I distinctly saw one flying alongside the main road. Unfortunately, night work was rather impracticable during my stay and the only moths I got were at the Monopol Hotel lights and at rest. These included *Plusia circumflexa* L., *P. limbirena* Guen., and the Geometers *Euphyia centrostrigaria* Wollaston, *Scopula ochroleucaria* H.-F. and the local form of *Gymnoscelis pumilata* Hbn.

On the 11th, I flew in the small aircraft from La Laguna to Grand Canary and travelled by 'bus the 15 miles from the airport there to Las Palmas, the large capital with a population of nearly 200,000 which stretches for some five miles along the coast to the famous harbour. The countryside of this island was appreciably different from that of Tenerife, with a much lighter and not so black volcanic soil. Most of the roads were lined with geraniums. Bougainvillea of every shade was in abundance, but there was much less *Opuntia* than in Tenerife and apparently more tomatoes and sugar cane and not so many banana groves.

On 12th April I took a 'bus from the city to Monte Arucas on the eastern coast. This is a small mountain some 15 miles away from Las Palmas which is reached by a spiral road. It was very warm when I reached the top and walked down. The rugged slopes were alive with butterflies, mainly *Maniola jurtina* L. f. *fortunata* which may be a separate species from the meadow brown as it is much larger with very orange females. The little skipper, *A. christi* Rebel, was everywhere in plenty, as also was *P. daplidice* L. with a few *Z. lysimon* Hbn. I saw, but failed to secure one *Pyrameis huntera* Fab. and also did not see the small form of *Euchloë beleamia* Esp. which Mr. E. S. Baynes had found fairly commonly at this spot a few weeks earlier. The 13th, I visited the area round the Santa Brigida hotel some seven miles inland. In the flowery garden were several *P. callirhoë* Hbn., also *Colias croceus* Fourc. and *Z. lysimon* Hbn. in the vicinity. April 14th was a glorious day, when with friends I went in a small 'bus to the central area of the island. We wound through the hilly district round barrancos till we reached Tejeda at some 5,000 ft., a most impressive spot where it was possible to see not only most of the island, but also the great peak of Teneriffe nearly 100 miles away. The whole slopes were covered with two species of broom, making them look quite golden. The chief butterflies at this altitude were as usual *P. daplidice* L. and *Colias croceus* Fourc. We stopped for lunch lower down at Sante Mateo where the small skipper and meadow brown were again well to the fore. My last outing on Grand Canary on the 15th took me further along the east coast to the area of Guia where Mr. Baynes had taken *C. webbianus* Brullé at the end of March, but again this local insect failed to be forthcoming. All the same species as at Monte Arucas were to be seen in most of the countryside, especially on a large thistle patch which also harboured many *P. cardui* L., but *P. xiphioides* Staud. seemed much scarcer than on Teneriffe.

On the night of 16th April I flew back to Teneriffe and then on direct to Madrid which I had not visited since 1930. On the 18th I went by train the 25 miles south to Aranjuez, exactly 31 years after my last trip there. I walked the 2 miles from the station along the Seville road and soon came across the ground I had collected in so many years before, looking hardly any different and still covered with much sage and small ilex-like bushes. It was a very warm day and a relief to be able to leave the busy main road and disappear among the undulating country alive with lepidoptera, especially along the bottoms of the small valleys. I was pleased to find all the species that were there in 1930 (vide 1931, *Entom.*, 64: 83). As soon as I arrived I noticed small Lycaenids flitting over the sage, some males being bright blue and others, somewhat smaller with hardly any blue upperside. It would seem that these were respectively two species of *Turanana*, *T. baton* Bergst. f. *albonotata* and *T. abencerragus* Pierret f. *amelia* which Capt. A. F. Hemming identified when I brought them home on my earlier visit to this locality. In his very full and interesting paper on this genus (1929, *Entom.*, 62: 27 seq.) he mentions that Signor Querci found these two insects flying together in 1928 at Cuenca. This form of *T. baton* has the normal orange spots absent on the underside of the hindwing. The only other Lycaenids observed were *Agrodiaetus cyllarus* Hbn. and what would appear to be *Aricia cramera* Eschsch. The Pierines were much in evidence, in particular both sexes of *Euchloë*

*euphenoides* Staud. with an occasional *E. ausonia* Hbn. and many *Pontia daplidice* L., while *Thais rumina* Hbn. f. *castilana* was sailing about with some worn female *Gonepteryx cleopatra* L. and several *Colias australis* Berger. I paid a further visit to this delightful spot two days later, on the 20th, but there was much less sun and it was only possible to collect up to lunch time by which time I had seen all the species of the previous occasion with the addition of several *Euchloë tagis* Hbn. f. *castellana* and *Issoria lathonia* L.

I flew home the next day well pleased with my three weeks in such very attractive and warm surroundings for this early part of the year.

## A Note on *Lophostethus dumolini* Angas (Sphingidae)

By J. S. TAYLOR

In his "Insecta Transvaaliensia" (1900-1911) W. L. Distant figured the adult and gave an account of this large and magnificent hawkmoth; he also quoted the description of the larva by Fawcett in the *Trans. Zool. Soc. London*, XV, 1901.

During his four years residence in Pretoria, Distant obtained only two specimens of the adult, and it would seem that it is not often come across. Some years ago, while domiciled at Fort Beaufort, C.P., I was presented with a very worn specimen, my only personal record of the species until comparatively recently.

I was therefore much gratified when, on 13th January 1959, I received a female moth from my friend C. J. Skead, then Director of the Kaffrarian Museum, King William's Town. This moth had been obtained locally and, although dead on arrival in Port Elizabeth, it had deposited a number of eggs in its container. Some of the eggs proved to be fertile and I was therefore enabled to follow the life-history and to rear the insect from egg to adult.

Platt (1921) records the following host-plants for *L. dumolini*:—*Grewia occidentalis* (Tiliaceae); *Hibiscus tiliaceus* and *H. panduraeformis* (Malvaceae); *Dombeya cymosa* and *D. rotundifolia* (Sterculiaceae). Fortunately *Grewia occidentalis*, a shrub-like bush, grows abundantly near Port Elizabeth, and as the larvae readily accepted it there was no difficulty in feeding them.

The following account of the life-history includes descriptions of the various immature stages.

*The egg.* The egg is oval, about 3.5 mm. in length, reddish-brown, and with the surface finely pitted. The incubation period occupied nine days (January).

*The larva.* On hatching, the larva measures 7 to 9 mm. in length. It is pale yellow at first but rapidly becomes orange, the long fleshy processes on each segment turning black. Some of these are bifurcated and many bear setae. The anal horn is longer than the other processes and is also bifurcated. The head is black.

From this brief description of the newly-hatched larva it will be seen that it differs very considerably from the usual type of sphingid larva. The differences become more marked in the later instars, and

the full-grown larva has a decided superficial resemblance to that of a saturniid. The median anal horn is constant, however.

Distant (*op. cit.*) quotes Harrison Dyar (*Proc. Ent. Soc. Washington*, iv, 1901) who studied the larva of *L. dumolini* "with reference to the supposed relationship of the Saturniidae and the Sphingidae" and who concluded that this species "is a true Sphinx, not more nearly related to the Ceratocampids than any other Sphinx, since it possesses true Sphingid tubercles, IV above V and before the spiracle, not united with V as in all the Saturnian phylum. Functionally, indeed, it is a Saturnian like the African Saturnians, with thorn-like tubercles; but the character is evidently adaptational, an irregular hypertrophy of the tubercles superimposed on the phylogenetic characters of the Sphingidae".

The full-grown larva measures some 112 mm. or  $4\frac{1}{2}$  inches in length. It is pale green and has a pair of long, thick and substantial shiny black branched spines with pale yellow bases and basal areas situated subdorsally on all segments from the second to the tenth. There is a lateral yellow patch on each segment from the fifth to the tenth as well as a lateral row of shorter spines from the second to the tenth segment. There are three to four spines per segment in this lateral row and five on the eleventh segment. These short lateral spines are sharp and prickly to the touch. The first thoracic segment has a black chitinized ridge narrowly divided and situated dorsally, while immediately behind it is a pair of short spines. The eleventh segment bears a large median and branched spine—the anal horn—as well as lateral spines; the anal shield and claspers are heavily chitinized and red, bordered by black. The head is yellow broadly margined by black and with a pair of black fascia in the centre, each with a small black spot above. The thoracic legs are banded yellow and black, and the prolegs are yellow with black extremities.

The larvae fed readily and well on the leaves of *Grewia occidentalis*, and eighteen of the original twenty reached maturity. The larva is sluggish in its movements; there are six instars, and the total duration of the larval period varied from 62 to 77 days, the average being 65 days. The first larva to enter the soil for pupation did so on 23rd March and the last on 7th April.

*The pupa.* Pupation takes place in a fragile cocoon in the soil, and the pupa is black, measuring some 58 mm. in length. The surface is finely lined and indented, the indentations being more pronounced on the anterior margin of the abdominal segments. It is shiny on the thorax and dull elsewhere. There is a short and substantial cremaster, the base of which has a knobby appearance.

Of the seventeen larvae which pupated, only two died in the pupal stage, one adult was deformed and the remainder were perfect specimens. Peat was used as a medium for pupation; this had been slightly dampened beforehand but soon became dry and remained in that condition throughout. The pupae were not disturbed in the cages in which they were contained and which were kept in an outdoors insectary. The first emergence took place on 4th February 1960, and the last on 12th April of that year. The pupal period varied from 318 to 386 days, the average being some 362 days. There was much difference in the duration of the pupal period in individuals which as larvae had entered the soil on the same date. Thus six larvae which entered the soil on

23rd March 1959 produced five adults on the five following dates in 1960:—4th February, 4th March, 7th March, 11th April, and 12th April.

*The adult.* According to Distant (*op. cit.*) the adult comes to light. It is a magnificent creature and my largest specimen has a wing-spread of 132 mm. or just over 5 inches.

Unlike so many sphingids, the proboscis in *L. dumolini* is almost restigial, being short, thick and papilla-like although with a sharp tip. The two halves are easily separable, and it is the same in both sexes. A somewhat similar condition is known in *Polyptychus*, another genus of Sphingidae, in which the proboscis has been reduced to a pair of short tubercles.

An attempt to mate a pair of adults was unsuccessful and the female died without laying any eggs.

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## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

***Stenoptilia saxifragae*** Fletcher: At the beginning of July, thanks to the kindness of Mr. E. S. A. Baynes, I had the pleasure of seeing a number of this moth alive in his garden at Glenageary. I visited this garden once before in 1953, but then the weather was unfavourable and I only saw a couple. I was greatly impressed by one habit of the insect, when disturbed instead of flying low like most plumes, it often rises high in the air, and one or two, indeed, flew over the garden wall.

The mystery of this moth seems as far from solution as ever. So far as I am aware, it has never been found beyond the Dublin district, where it feeds on mossy saxifrages in gardens. The establishment of an alien insect in a district so suited to this saxifrage is not an unlikely event, but so far no one knows whence it came, and the saxifrage is a garden one, not a native of Ireland. Moreover, the moth is a little faddy in its tastes; Mr. Baynes tried the interesting experiment of planting *Saxifraga hypnoides* L. from the Burren between two clumps of the usual saxifrage infested by *saxifragae*, and as far as can be seen, the plume has refused to have anything to do with it.

**The movements of Tortrices:** At the risk of becoming tedious, I must again record two captures of Tortricids which must have come from a distance. The first, at the end of June, was of *Eulia formosana* Hübn. by Mr. D. More in his light trap at Hockley. This is the first record for south Essex, although Mr. A. J. Dewick has taken the moth at Bradwell. The second, in my own garden trap on 25th July, was a female *Eucosma conterminana* H.-S. I have long known *conterminana* as an inhabitant of a locality seven miles away, but although, as the moth is a favourite of mine, I always stir up any rough vegetation containing wild lettuce that I come across, this is the first I have seen elsewhere in thirty years.

***Euzophera advenella*** Zinck.: This pretty little moth is one of the latest victims of melanism. Last year I saw a couple of smudgy dusky ones in my trap; this year one of every two is of this form (I see two or three most nights).

# Impressions of the New Forest in 1961 and Before

By H. SYMES

Col. Fraser's article in the June "Record" (*antea* 127-31) makes depressing reading, but the picture it presents is only too true. My acquaintance with the New Forest does not go back as far as his, but I did have one day collecting butterflies there as long ago as 1900, when I remember taking a few worn *Limenitis camilla* L., and some very fair *Argynnis paphia* L. and one perfect specimen of *A. cydippe* L. I also remember that it was a very hot day and that I finished up by drinking six cups of tea at Lyndhurst. However, most of my collecting in the Forest was done in the 1930s, when *camilla* and *paphia* were abundant in most of the enclosures.

On 7th July this year, I paid a visit with the Rev. F. M. B. Carr to Islands Thorns enclosure, which, during the years before the war simply swarmed with *camilla* and *paphia*. It was the best place I knew for *valesina*, which was often comparatively plentiful. I believe that *nigrina* sometimes occurred there, and I know that *Aphantopus hyperanthus* L. var. *lanceolata* did (*teste* my friend the late Canon T. T. Haines *in litt.*). I had not visited this enclosure for ten or twelve years, because the last time I went there I found that all the ditches had been cleared and the brambles which used to overhang them and whose flowers are so attractive to *camilla* and *paphia* had all been cut away and their roots smothered with an embankment of mud. This sight was so discouraging that I decided to wait a few years to give things a chance to recover, but this year the position was as bad as ever, and no doubt the clearing process had been repeated. And what did we see in Islands Thorns? One *paphia* and one *camilla*! I also found two larvae and one pupa of *Gonepteryx rhamni* L. on alder buckthorn (*Rhamnus frangula*). *A. hyperanthus* was plentiful enough, and so, of course, was *Maniola jurtina* L., and we saw one or two *A. cydippe*. After lunch, we proceeded to Oakley enclosure, where we saw two *paphia* but no *camilla*. The commonest butterfly here was *Thymelicus sylvestris* Poda.

The extreme scarcity of *paphia* and *camilla* is most disturbing, and it would be a tragedy indeed if they went the way of *Apatura iris* L. and *Nymphalis polychloros* L., but if I may coin a word, the acconiferation of the New Forest is proceeding so steadily (we heard the ominous crash of oaks being felled at one end of Islands Thorns) that *paphia* and *camilla* will soon be suffering from acute housing shortage. I have found larvae of *camilla* on honeysuckle growing under a fringe of Scots pines along the edge of an enclosure (and also in Pamber Forest, Berkshire) but neither honeysuckle nor violet will tolerate a plantation of spruce.

Outside the enclosures, the situation is not so bad. A good deal of heathland has been converted into grassland, but there is still plenty left. In April, I found *Celastrina argiolus* L. less plentiful than in 1960. In June, when I went to search for the larvae, I could not find any holly trees with berries on them; apparently it is a very bad year for them, and Christmas decorations will suffer. Larvae of *argiolus* are said to eat the flowers and berries of dogwood (*Cornus*), alder buckthorn (*Rhamnus*) and spindle tree (*Euonymus*), but if the eggs were laid on

holly, would the larvae be able to complete their growth on the young leaves?

On 24th May, I met Brigadier Warry at my favourite locality for *Hemaris tityus* L., where our arrival was greeted by a buzzard sailing in circles over one of the enclosures. *Tityus* was not quite so plentiful as last year, and there were fewer suitable flowers to attract it: in particular, louse-wort (*Pedicularis sylvatica*) was very stunted and hard to see. On 5th June I paid another visit to this locality with the Rev. F. M. B. Carr. A few *tityus* were still on the wing and we were surprised to find *Diacrisia sannio* L. (males only) already out. On 15th June, Mr. Carr and I visited a locality for *Eustrotia uncula* Cl. They needed working for and were scarcer than they were in 1953, when I last went there with the late Dr. H. King, but I doubt if they were fully out, as the six specimens we took were all nice fresh ones. While looking for *uncula*, I found a larva of *Dasychira fascelina* L. which had just moulted and was resting on the top of the heather beside its old skin, which made it quite conspicuous. It was the first time Mr. Carr and I had ever come across this species in the New Forest, although we had found the imago in considerable numbers at Ashley Heath, about two miles west of Ringwood, in July 1945. Unfortunately, the larva had been "stung" and developed the same symptoms as several larvae found in recent years at Morden Heath.

Col. Fraser describes the disastrous effect which the replacement of deciduous trees with plantations of conifers has had on the New Forest flora. As a tragic instance of this, there is a patch of wild lily-of-the-valley (*Convallaria majalis*) which I have known for over twenty years. It used to bear plenty of flowers, but now it is being gradually stifled by the ubiquitous conifer, and when I went to look at it this year I found plenty of leaves, but only three or four flowers, and these but poor specimens. It is a shade-loving plant, but cannot abide conifers, and in its search for more light it is spreading to an adjacent grass track. Perhaps the greatest botanical rarity in the New Forest is the wild gladiolus (*G. illyricus*). The largest and best known colony is not far from the main A35 road, and just before the war I came across two young botanists who had motored down from the Cotswolds for the day to look at it. I was convinced that their intentions were strictly honourable. I have previously found one or two odd plants in flower in two other places, and this year I was delighted to find two flowering among bracken in an entirely new locality.

Col. Fraser also refers to the former abundance of *G. rhamni*. I have never seen such numbers of this species as during one late August in the 1930s, when there were scores, perhaps hundreds, of them sitting on the flowers of bell heather (*Erica cinerea*) along the side road leading from Burley village past Burley Lawn to the Lyndhurst road. Just before the war a determined onslaught was made on their food-plant (*Rhamnus frangula*). One day I was talking to a group of gypsies sitting round their fire near Rhinefield and cutting the stems (one can hardly call them trunks) of this small tree into suitable lengths. They were tied up neatly into trusses and loaded into carts for transportation. I saw one of the carts standing in the road close by full of these trusses. The gypsies assured me that charcoal made from this species of tree was particularly valuable in the making of munitions. How

much truth there was in this assertion I have no idea, but I certainly saw *R. frangula* being cut down and carted away in many parts of the Forest. It is not too easy to find, either, unless you are a *G. rhamni*. In the spring, before the leaves are out, I have watched this insect making her way unerringly through the undergrowth to an inconspicuous little bush and laying her eggs on it. However, in spite of the wholesale destruction of their food-plant, I noticed plenty of *G. rhamni* in the Forest this spring, and of *R. frangula*, too.

Again, Col. Fraser mentions the disappearance of sawfly. A few months after I had noticed the onslaught on *R. frangula*, I saw sawfly bushes receiving similar treatment and presumably for the same reason. I do not remember noticing a single sawfly bush in Islands Thorns this year. Another butterfly to which Col. Fraser refers is *Polygonia c-album* L., which he saw in such abundance some twenty-five years ago. This insect was, of course, almost unknown in the Forest before 1920. The first time I saw one in this area was at Highcliffe on 26th September 1921. It was sipping the sap exuding from an oak tree. But in the 1930s and '40s it was common enough round Brockenhurst. In 1944 I watched a female ovipositing on stinging nettles at Queen Bower, and some weeks later, on 10th June, I found a few larvae on those nettles. I also found a larva on a red-currant bush in a garden. After the war, it was not uncommon in Bournemouth (where I once found a larva under a small elm tree) and the Wareham district. It regularly came to *Buddleia* in my garden, but less frequently during the last two years. This year, after a glimpse of one on 1st March, I did not see the species until 12th July, when one came to my *Buddleia*. I saw it again on 18th and 19th July. There is no doubt that *c-album* is less common than it was a few years ago, but this cannot be due to any scarcity of its food plants. There are plenty of wild hops growing in the hedges and stinging nettles in the New Forest, and the planting of conifers cannot have had any effect on them.

Another once common butterfly that has greatly decreased in numbers is *Thecla quercus* L. and mention of this species reminds me of the oak trees on which the larvae of so many moths are found, and of one moth in particular, *Lymantria monacha* L. What has happened to this species? Once so abundant, it is now seldom seen, and Mr. Carr tells me that he has hardly beaten any larvae in recent years. Another oak-feeder which has become scarcer recently is *Moma alpium* Osbeck (*orion* Esp.).

The best year I have known for larva beating in the New Forest was 1934. In August I beat 38 larvae of *orion* (29 of them in one enclosure), 15 *Stauropus fagi* L. and 7 *Apoda avellana* L. (*Limacodes testudo* Schiff.). (The only time I ever beat a larva of *Heterogenea asella* Schiff. was in 1933). In addition to these, I found a number of other larvae by searching: these included *Mimas tiliae* L. (on alder), *Smerinthus ocellatus* L., *Harpyia hermelina* Goeze, *H. furcula* Cl. (ova), *Notodonta dromedarius* L., *Pterostoma palpina* Cl., *Tethea octogesima* Hb., *T. or* Schiff., *Apatele alni* L., *A. leporina* (many) and *A. megacephala* Schiff.

About this time I ran across a parson friend (who shall be nameless) one morning just as he was setting out on a day's beating. He had no beating tray, but was accompanied by two sturdy young



parishioners armed with enormous kitchen trays, whom he stationed under a tree with instructions to stand there holding out their trays, while he belaboured the branches with a stout pole such as Hercules might have used had he been an entomologist. I pitied the state of the trees when he had finished with them, and the heads of his henchmen if he made a bad shot.

Then there was *Lithosia quadra* L. I am reliably informed that in one night in July 1938 about a hundred *quadra* came to light at Ladycross, and that, mind you, was in the days before the Mercury vapour light. In June 1939 I found five nearly full grown larvae—handsome creatures—on oak in this locality, but when the late J. L. Moore took me there with his light one night in July, only one *quadra* came to the sheet, and a poor specimen at that. I have not heard of *quadra* or *orion* being seen in large numbers recently.

A day's larva beating with the Rev. F. M. B. Carr in the New Forest on 1st August showed up the difference between the state of things in 1934 and to-day. We went to an enclosure where, about five or six years ago (when the lean times had already begun) Mr. Carr and a friend had obtained four *orion* larvae, three *fagi* and one *alni*. This year he beat two *orion*, and I thought he was lucky to get even these, as I doubt whether as many as twenty larvae fell into our two trays. Even such common things as *Dasychira pudibunda* L. and *Plagodis dolabraria* L. were represented by only three or four specimens. Incidentally we saw four *paphia* still on the wing.

No, as far as the New Forest is concerned, I am afraid that it is a case of Ichabod, or, if you prefer it "Fings aint what they used t'be". A certain amount of change must be accepted as inevitable, and in his interesting and informative article (*antea* 17-19) Mr. T. R. Peace defended the policy of acconiferation. Incidentally, he said that it encouraged the pine hawk (*Hyloicus pinastri* L.) and nun moth (*L. monacha*). But in my experience *H. pinastri* and its larva are much more commonly found on old and often stunted pines on open heathland than among the serried ranks in plantations. I have never found the larva of *monacha* on anything but oak, although South gives pine as a foodplant. However, if the species is encouraged by conifers, why has it become so scarce? It would, of course, be grossly unfair to blame conifers for the lack of butterflies in enclosures where hardwoods are still standing, but there must be *some* reason for the disappearance of *paphia* and *camilla* in the New Forest, especially as Mr. Nigel Easton (*antea* 34) states that *camilla* was so abundant in south Berkshire in 1960. It would be interesting to hear whether it was equally plentiful this year. One cause of the scarcity of these two species was suggested by a Nature Conservancy officer whom Mr. Carr and I met. It is the increasing number of fallow deer in the Forest. Control of their population is becoming a real problem, and they are particularly plentiful in Islands Thorns enclosure. Although one seldom comes across these animals in the middle of the day, I saw two fawns in this enclosure on 7th July. These deer browse on anything they can find, which would include honeysuckle, violet, and young brambles. Our informant said that he had noticed that honeysuckle was not so plentiful as it used to be. He also confirmed my belief that *argiolus* was scarcer than last year, and that it was a very poor season for holly berries. Conifers he

dismissed as bad for ornithologists, entomologists and botanists, but defended them as an economic necessity, and I think that that is about the best that can be said for them.

## June on the North Cornwall-Devon Coast

By Commander G. W. HARPER, R.N.(Retd.), F.R.E.S.

A Highland Lepidopterist is frequently tempted to plan his annual holiday so as to feast his eyes on the rich southern insects which do not occur in the far North, and this year I was more than usually glad to succumb to the temptation owing to the very lean start to the season in Scotland added to some earlier family health troubles. As a result we managed to rendezvous on the 17th June at a delightful farm close to the North Cornwall-Devon border and only a few hundred yards from the sea. Our lively hopes were not appreciably damped by being greeted by a typical West-country drizzle and sea mist!

Our first four days were a glorious cloudless heat-wave, and we sought to satisfy our first hope by exploring the coast for likely spots for *Maculinea arion* L., which I had only seen previously and very rarely in its Cotswold haunts. Here on the coast there seemed to be a dismayingly large increase in new young gorse growth, probably dating from the virtual extinction of rabbits by Myxamitosis, and a corresponding reduction in the amount of Thyme. Certainly our hopes sank as the fine sunny days passed without seeing this lovely butterfly on the wing, though we realized we might have been a little too early for it in spite of an early season. However, on the fourth hot day, I found two in a small valley and was astonished to find them worn, as also did my son who found two more equally worn. Probably this was the end of the first emergence, and sure enough we had to possess our souls in patience until the 28th June, near the end of our stay before we at last had the pleasure of seeing a few freshly emerged specimens of this beautiful butterfly. We never saw more than a very few at any one locality at any one time, and often none at all, so I hope that readers of this note will not resent a word of warning, and an appeal not to over-collect, based on three observations; first, the natural habitats have all here been considerably reduced in area by the encroachment of gorse on the Thyme; secondly, the two "reserves" of which I was told, that at Welcombe and at Speke's Mill, seem scarcely effective; the former no longer exists apparently, and the latter has no notices! Thirdly, as I met no less than eight other "nets", I feel we should all be careful!

It was most interesting also to see a great variety of other diurnal insects, although for sheer beauty alone the memory of a fresh male *M. arion* basking with wings outspread on a dwarf thistle is rivalled by that of a brilliant green Rosechafer beetle feeding on a thyme covered anthill, and these will last, I hope, for a very long time to come. We were, however, unsuccessful in finding *Aegeria muscaeformis* Esp. which we had hoped to do, but the Burnets were interesting. The trefoils and other "low plants" of the cliff slopes were thick with last instar larvae which could only have been those of *Zygaena filipendulae* L. which, as Mr. W. G. Tremewan has recently pointed out in the *Record*, emerges

in late July and August in the South and West of England. What then were the five-spotted and six-spotted forms which were flying *on the same ground* all through our visit? The former, I suppose, must have been *Z. lonicerae* ssp. *transferens* Verity, though to my inexperienced eye they looked more like *Z. trifolii* ssp. *palustrella* Verity, except for being very fresh. But Tremewan is of the opinion (*Ent. Rec.*, 73: 5, page 110) that *Z. filipendulae* ssp. *stephensi* Dup. does not fly on the same ground as the normal later *filipendulae*, so perhaps these early specimens were only an early spread of the type emergences. Certainly some species of butterflies were emerging early; some specimens of *Argynnis aglaia* L. were quite worn, and *Melanargia galatea* L. and *Aphantopus hyperantus* L. were both well out by the end of June. I would like to point out that in Scotland, where I have personally collected *Z. filipendulae* in many localities in Argyll, western Inverness-shire, the Hebrides, Moray and the East coast near Aberdeen, two facts are established: first, emergence begins in mid-June and the species is virtually over before the end of July; and secondly, the population density of the "colonies" is very much lower than in the South of England, so that I incline to the view that increased competition on the foodplant plus the wider spread of the English Summer are responsible for the later emergences in general there, rather than a sub-specific difference, but I am quite open to be shot down by Mr. Tremewan on this point!

Other interesting day-fliers seen were many *Ochlodes venata* Br. & Grey, *Thymelicus sylvestris* Poda, beginning to emerge at the end of the month, worn *Pararge aegeria* L., worn and fresh *Polyommatus icarus* Rott. and *Callophrys rubi* L., and worn *Lycaena phlaeas* L.

Although some of the nights were chilly with a land breeze a fine number of species were seen at the portable m.v. lamp, including five Sphingids, and it was a rare pleasure after many years to be bombarded by quantities of these great moths, *S. ligustri* L., *S. ocellata* L., and *D. elpenor* L., being the most abundant. The light was worked mostly on the cliffs in order to try for *Agrotis trux* Hb. ssp. *lunigera* Steph. and *Hadena barrettii* Dbld., which was successful. The former were plentiful, in splendid condition, and nicely variable, but what a dismal moth is the latter, which I had not seen before. Not only were most of them very worn, but even the fresh ones have an undistinguished look which necessitated confirmation of my very tentative determination by M. W. H. Some very interesting yellowish and blackish *H. conspersa* Schf. complicated this issue! One quite unexpected and spectacular visitor on the cliff top was a fine, fresh female *Apatele alni* L.! Other unlikely visitors to the m.v. light in such a situation were several very fresh and lovely examples of the pale form of *Stauropus fagi* L., presumably strayed, like the *A. alni*, from the lush wooded bottoms of the near-by valleys. But to me, perhaps the most intriguing experience of the cliff-top m.v. sheet was an intensification of the *Ammagrotis lucerneae* L. mystery. On the first night there I had an extraordinary run of about a dozen very fresh examples of both sexes which was not repeated on later good nights, nor were the males seen flying by day as they do in Inverness-shire, where I cannot find them at night!

Lastly, m.v. light worked in a valley bottom also produced some good things among plenty of commoners. The most interesting, perhaps,

was the discovery that the local *Procus* was *P. versicolor* Bork. in large numbers and fine variety, with apparently no *P. strigilis* Cl. A few *Mythimna turca* L., some very worn, others fresh, were also seen, and a few very fresh *Leucania pudorina* Schf. and *L. putrescens* Hb. rejoiced our eyes.

Thus ended a most pleasant and successful entomological holiday.

Nedaich, Newtonmore, Inverness-shire, Scotland. 8.vii.1961.

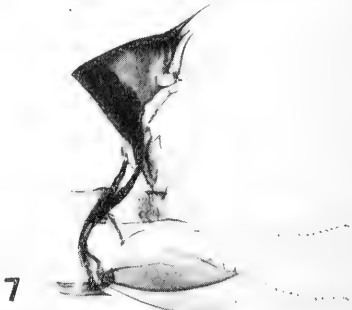
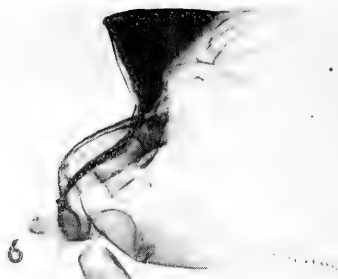
## Structural Characteristics of *Erebia sudetica* and *Erebia melampus*

By B. C. S. WARREN, F.R.E.S.

It is well-known that in the genus *Erebia* the spines on the claspers of the male genitalia develop in definite systems which are correlated to the species, and further that such systems are unaffected by the variation that is habitual in the sizes and numbers of the individual spines. Evolution has worked on the collective results of that variation without in any way restricting its activity. In this we have yet another example that variability is an indestructable attribute of living matter, as has been postulated in other connections (Warren, 1937; Jordan, 1958). The taxonomic value of the systems is unquestionable, and the variable nature of the spines a generic characteristic. In *E. sudetica* and *E. melampus* the spines are very fine and the systems consequently not readily observable without greater magnification than is usually necessary when studying such structures. The photographs of the genitalia given in my Monograph of the genus (1936), enable the differences to be recognized though not as clearly as might be; this fact led me when separating *sudetica* as distinct (1949), to say I hoped to give better illustrations at a later date. During the past year several correspondents have asked for information concerning *E. sudetica*, which reminds me I should have dealt with the matter long ago.

The photographs on the plate accompanying this note were taken shortly after the publication of my original paper (1949), and can be compared with the description then given. It may, however, be helpful to point out here that in *sudetica* all the spines are distinctly separated, even the very fine ones which develop as simple spines or occasionally as united pairs, or triplets, which pairs or triplets are separated from the spines on each side of them. All spines in *sudetica*, of whatever size, are of heavier build than the corresponding spines in *melampus*; in the latter the fine spines are mostly touching.

These characteristics are seen clearly in the more highly-magnified photographs (figs. 3, 4, 5, 8, 9 and 10, all  $\times 42$  diameters), and can be more or less observed in the photographs of the complete genitalia (figs. 1, 2, 6, 7), which are magnified 18 diameters. The latter photographs serve to show the relative sizes of the structures in the two species, and also to warn anyone who tries to identify them with no more than the aid of a hand lens of high power (say  $\times 10$ ), of the difficulty he may expect to encounter, for such magnification is considerably less than our figures. These complete photographs may further help in contrasting the relative proportions of the structures with those





of widely remote species. With this object in view I have always employed a uniform magnification of 18 diameters for such complete photographs of the genitalia for all species of *Rhopalocera* that I may be dealing with, regardless of the size of the insect; even if this has necessitated cutting off parts of the photographs for purposes of publication.

Though some details such as the spine systems in *sudetica* and *melampus* require a little more magnification, high magnifications are as a rule not required in entomological work (except for chromosomes), and anything up to 500 diameters will usually be adequate. Such magnifications can easily be obtained with low or medium-powered objectives. All photographs are best taken at the actual magnification required. If the resolving power of the objective is insufficient, and the magnification of the original negative too low to show the finest detail, it is obvious that no amount of subsequent enlargement of the photograph will remedy these defects. The same of course applies to drawings, but a more frequent defect in the latter is a strange tendency to exaggerate fine detail (or apparently any detail that has attracted the attention of the drawer), disproportionately to the rest of the work; this at times can be quite as misleading as insufficient clarity of fine detail.

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#### EXPLANATION OF PLATE.

- 1; 2. *Erebia sudetica inalpina*; Grindelwald. × 18.
3. *Erebia sudetica inalpina*; Grindelwald. × 42.
4. *Erebia sudetica sudetica*. Retezat Mountains. × 42.
5. *Erebia sudetica lioranus*. Le Lioran, Cantal. × 42.
6. *Erebia sudetica lioranus*. Le Lioran, Cantal. × 18.
7. *Erebia melampus momos*. Mallnitz, Carinthia. × 18.
8. *Erebia melampus melampus*. Pontresina, Grisons. × 42.
9. *Erebia melampus momos*. Mallnitz, Carinthia. × 42.
10. *Erebia melampus tigranes*. Niesen, Bernese Oberland. × 42.

Each photograph from a different specimen.

RELEASE OF *NYMPHALIS ANTIOPA* L. IN NORTH KENT.—Late on Sunday afternoon, 31st July, I released some fifty live *N. antiopa* on Hosey Heath, near Westerham. I did not mark them as they were the American sub-species, which is easily identified by the heavy dark speckling on the yellow borders. From the behaviour of the few I have kept in a cage at my home, it would appear that the insects are preparing for hibernation already. As they were well fed on honey and water for a fortnight before the release, I feel they have a good chance of surviving the winter in an area which closely resembles their natural habitat in Finland, where I first saw this butterfly alive more than twenty years ago.—L. HUGH NEWMAN, F.R.E.S., Betsoms, Westerham, Kent. 5.viii.1961.

## Ants in Finland

By C. A. COLLINGWOOD

An excursion was made in May, 1961 with the particular object of implementing information on the distribution of *Formica* spp. in Finland. Results of a similar journey in Norway and Sweden have already appeared (Collingwood, 1959) but it was of great interest to visit Finland where little has been published in recent years. Short stops of a few hours only were made but most of the local northern species including *Formica gagatoides*, *F. transkauasica*, *F. uralensis*, *F. suecica* and *F. forsslundi* were seen in their appropriate habitats.

Notes on the species:—

### MYRMICA

*M. rubra* L. was only seen on the island of Ruissalo near Turku. Two of the numerous colonies seen were found nesting in *Lasius flavus* mounds as is commonly found with *M. scabrinodis* in Britain. *M. ruginodis* Nyl. was present at every place visited and is clearly the most widely distributed ant in Scandinavia as Holgersen (1944) found in Norway. The microgynous form (Brian and Brian, 1949) was seen at Savonlinna and Pieksamaki in central S. E. Finland while the more usual macrogynous form was common everywhere. In 1958 I took 'microgyna' in both Norway (Svolvaer) and Sweden (Stockholm), but I have not seen it in collections from continental Europe. *M. sulcinodis* Nyl. was present at Rovaniemi and is doubtless as common in the more open country of N. Finland as it is in N. Scandinavia and parts of Scotland. *M. lobicornis* Nyl. was taken at Kouvola in S. Finland and Laurila in the north.

*M. schencki* Em. occurred both at Ruissalo and Savonlinna. This is our rarest *Myrmica* in Britain but I have the impression that in S. Scandinavia generally it is as common as *M. sabuleti* Mein. which I also found at Savonlinna. Forsslund (1957) gives the same range for the two species in Sweden, whereas in Britain *sabuleti* is much more abundant and occurs right up to N. Scotland. *M. scabrinodis* Nyl. was common as elsewhere in N. Europe. I did not find *M. ruginodis* Nyl. in Finland where it has been recorded but had the pleasure of seeing it again near Åhus in S. Sweden.

### LEPTOTHORAX

*L. acervorum* Fab. was found everywhere and seems to be as common in Scandinavia as *M. ruginodis*. The inquiline species *Harpagoxenus sublaevis* Nyl. occurred with *L. acervorum* at Pieksamaki in a pine stump. This interesting ant was originally discovered in Finland but it is also quite common in Norway and Sweden although decidedly local in the rest of Europe. The only other *Leptothorax* seen was *L. tuberum* Fab. nesting in a rocky bank at Savonlinna. Another inquiline, *Formicoxenus nitidulus* Nyl., was found in a nest of *Formica lugubris* Zett. at Laurila and also in some numbers at Haparanda in N. Sweden with *F. aquilonia* Yarrow. *Tetramorium caespitum* L. was only found at Savonlinna which is well inland although its distribution in Scandinavia generally, as in Britain, tends to be coastal.



## CAMPONOTUS

*C. ligniperdus* L. was found abundantly under stones at Savonlinna where alate queens and males were already present in the nests on 23rd May. *C. herculeanus* L. was general at all sites up to Laurila, typically nesting in spruce stumps. Hölldobler (1944) records it at Lat. 66 in N. E. Karelia; Forsslund (1957) lists it for all the provinces of Sweden while in Norway (Holgersen, 1942) it occurs as far north as lat. 70°.

## LASIUS

*L. niger* L. was generally abundant and was taken as far north as lat. 65° 50' at Laurila. This is the most northerly record to date for this common and wide-ranging holarctic species. I also saw it at Oulu and Forsslund has taken it as far north as Lulea in Sweden. *L. flavus* F. was general in S. Finland. *L. mixtus* Nyl. is regarded as a synonym of *L. umbratus* Nyl. on good evidence by Wilson (1955), but this has not been accepted by some European authors. Dr. Forsslund told me that all Swedish examples are quite distinct with no overlapping with *umbratus*. Nylander's types at the Helsinki Natural History Museum as well as later captures in Finland belong clearly to one or the other. However, apparent intermediates do in fact occur and I have seen such from Denmark in the Zoology Museum, Copenhagen by courtesy of Mgr. Chas. Bisgaard. A typical *L. mixtus* queen was found wandering on a bank at Savonlinna and typical workers have been taken at Hauerseter in Norway on a former occasion. A few *L. umbratus* workers were found under a stone at Ruissalo. Another similar species *L. rabaudi* Bond. is quite common in parts of Denmark according to Mgr. Bisgaard and also in S. Sweden where I found it in some abundance on calcareous sandy heathland near Åhus in Skåne. Here most of the nests were under stones often with irregular earth mounds built up to one side. This species has not yet been found in Norway or Finland. *L. fuliginosus* Latr. does not appear to be common in Finland where only one series is represented in the Helsinki Museum. Åhus in S. Sweden is the only locality where I have seen it in Scandinavia.

## FORMICA FUSCA Group.

*Formica fusca* L. was seen at Ruissalo, Salo, Turku, Helsinki, Kouvola, and Savonlinna in the south. *F. lemani* Bond. was only recognised at Oulu, Laurila and Rovaniemi in the north but probably occurs considerably further south as well. *F. rufibarbis* Fab. was present in numbers at Savonlinna but is quite local in S. Finland. *F. cinerea* Mayr. was recorded for Finland many years ago but I do not know of any recent published information on its distribution there. Dr. Forsslund informs me that it has been taken in several places in the south and east. It is locally common in a few places round the coast of Denmark and in S. Sweden where it inhabits dry sandy areas. It is not known in Belgium, the Netherlands or N. Germany and there is a big gap between its Scandinavian localities and its main areas of distribution in Central Europe. I did not see this species in Finland but had the pleasure of observing it in numbers around Åhus in Sweden. One nest under a stone had a single queen, contrasting with its usual multicolonial habit with many queens.

*F. gugatoides* Ruzs. was only seen once at Rovaniemi. This is the most northern species of this group and Holgersen (1942) records it right up to the North Cape at lat. 70° 40'. South of the Arctic Circle it is restricted in Scandinavia to the mountains of Norway and Sweden where it has the same habitat as, and presumably competes with, *F. lemani*. The bog inhabiting species *F. transcaucasica* Nas. (*picea* Nyl.) was seen in numbers at Pieksamaki in Central Finland as well as at Rovaniemi in the north where there are many miles of bog forest. It is also widely distributed in Sweden and Denmark but it is not yet recorded from Norway. It is frequent in N. Europe in suitable localities and further south it is found in mountain areas from the Caucasus to the Pyrenees where I found it in wet upland meadow in 1959 near Font-Rameau in the Pyrénées-Orientales.. Records of this species from Central Asia and the Himalayas seem to me suspicious and probably refer to the superficially similar *Proformica nasuta* and its allies. For example, series in the Stockholm Natural History Museum from S. Mongolia and S. Korea collected during one of Sven Hedin's expeditions are labelled '*F. picea*' but are clearly a *Proformica* species.

#### FORMICA EXSECTA Group.

*Formica exsecta* Nyl. itself was very abundant in Finland from Kouvola in the south, where I saw it in natural combat with *F. aquilonia*, to Rovaniemi. At Kouvola, a queen was taken among the combatants and had a more deeply excised scale and was as well considerably more hairy than *F. exsecta* from Britain. Worker pilosity however, seems to intergrade more or less from north to south among the numerous series I have from Scandinavia. Series of hairy workers from Finland led Betrem (1954) to propose a separate species '*kontuniemi*' but a clear distinction between the various worker samples in my collection does not seem to be possible. A study of series of males and queens would be necessary before a decision was made on the validity of Betrem's suggestion. Nests of *F. exsecta* were found in the open, in woodland, in bogs and even in pasture and the habitats of this common ant ranged over those typical for each of the following more local species.

*F. pressilabris* Nyl. is not a common species anywhere in Europe. Holgersen (1944), only knew of one locality in S. Norway but Forsslund (1957), indicates a wide distribution in S. Sweden. A group of 7 nests along a sandy track were seen at Savonlinna in S. E. Finland. These nests were covered with fine grassy litter but not heaped up in a definite mound.

*F. suecica* Adlerz is an interesting Scandinavian species only known from Norway, Sweden, Finland and one locality in Estonia. Holgersen (1943) and Forsslund (1947) have described its nesting habits in Norway and Sweden respectively. Typically it nests in tree stumps without much movable leaf litter but sometimes irregularly shaped litter mound nests are built. Both stump and mound nests were seen at Oulu and Rovaniemi respectively. This ant much resembles *F. exsecta* in general appearance and size but is slower moving and less aggressive. It is distinguished by the characteristic rounded head lobes, scale shape and hairless eyes.

*F. forsslundi* Lohmander is one of the most recent additions to the European fauna. It was described in 1946 from one locality in Sweden since when Forsslund has found it in several places from Småland in the south to Härjedalen in the centre and Dr. R. Krogerus has taken it in Central Finland. More recently Dr. H. Kutter found it in 1957 in Switzerland. I had the pleasure of seeing this species at Rovaniemi where I found three small nests in the bog among dwarf birch and willow. This locality is about four degrees latitude north of its known range in Sweden. This small shining species is found exclusively in forest bog in much the same sort of habitat as *F. transcaucasica*.

#### FORMICA SANGUINEA Latr.

*F. sanguinea* is abundant throughout Scandinavia. Holgersen recorded it only as far north as Dovre in Norway. Forsslund, however, recorded it from Jokkmok and I found it in 1958 at Gällivare both within the Arctic Circle. In Finland it occurred at Rovaniemi and Oulu as well as several places further south. In these Northern localities, including also Haparanda and Luleå, the auxiliary species found with it was *F. lemani*. There is no definite record of *F. gagatoides* as slave species but Hölldobler found *F. sanguinea* in N. E. Karelia at lat. 66° in association with *F. 'fusca-picea'* which almost certainly refers to *F. gagatoides*. Both Adlerz (1914) and Skwarra (1929) found mixed nests of *F. sanguinea* and *F. transcaucasica*. I saw such a nest in a bank at the edge of a bog at Pieksamaki. This was a typical *sanguinea* nest and the *transcaucasica* workers appeared to be thriving outside their usual damp habitat. In S. Scandinavia the slave species is generally *F. fusca* but I found one example of a *F. cinerea/sanguinea* colony near Åhus in Sweden. Instances of this are not common but evidently as Donisthorpe (1927) pointed out, *F. sanguinea* will enslave any member of the *F. fusca* group that happen to be in the neighbourhood.

#### FORMICA URALENSIS Ruzsky.

*F. uralensis* was originally described from the S. Urals. There and in S. W. Siberia its habitat is dry steppe. It is also widely distributed in Eastern Europe and Scandinavia from the Kola peninsula to the Swiss Alps and westwards to Jutland. Records from the whole of this area describe its characteristic habitat as forest bog. The curious discrepancy between these biotopes is worth further study, particularly by entomologists having access to information and specimens from Asiatic Russia. The species has been taken in about half a dozen places in Finland where it is likely to be quite common over the many miles of bog in the centre and north. I found it plentifully at Rovaniemi. Most of the nests were in the bog among sparse trees with rather flat mounds built up of spruce needles. They were immediately distinguishable by eye from the abundant nests of *F. exsecta* in the same neighbourhood which were more domed and built up of mixed fragments of heather and general leaf litter. Workers of *F. uralensis* in one nest were extremely small, about 4-5 mm. long instead of 5-8 mm. Two nests were anomalous as they were built against the relatively dry railway bank. Forsslund (1949) gives an account of the habits and distribution of *F. uralensis* in Sweden and mentions the occasional occurrence

of nests on dry ground but always in the near neighbourhood of swampy ground. I also saw a single isolated nest of this species among scattered firs in the bog at Pieksamaki.

#### FORMICA RUFA Group.

*F. truncorum* Fab. is a north and central European species of rather sporadic occurrence outside Scandinavia. In Norway and Sweden it is general and widely distributed from the Arctic north to the extreme south of Sweden. In Finland I only found it at Savonlinna in the south east, nesting typically in a tree stump. *F. cordieri* Bond., a species of more southern distribution is still only known in Scandinavia from Sweden where it is common in the south and from one locality in Denmark (col. Ch. Bisgaard). I saw no representatives of this ant in the Helsinki museum and the generally more common species *F. nigricans* Em. has apparently not often been taken there. These two species together are the '*pratensis*' of authors before Yarrow (1955) but were also confused with the more northern species *F. lugubris* Zett. Thus Hölldobler (1944) refers to *F. pratensis* at lat 66° in N. E. Karelia but this was undoubtedly *F. lugubris* and Forsslund's more critical records do not give *F. nigricans* further north than Central Sweden. I saw several nests at Savonlinna and also took *F. nigricans* at Boxholm in Småland, a new provincial record for Sweden. *F. lugubris* Zett. occurred at Laurila and Rovaniemi and may be expected to abound throughout N. Finland. This species has a very wide range in Eurasia from the Pyrenees in the south and Ireland in the west to Kamschatka in E. Siberia. Typical examples of this species from Kamschatka collected by Dr. Malaise, labelled variously '*pratensis*' or *rufa* according to the amount of red on the worker thorax were seen in the Stockholm Natural History Museum. Although this is the only record for Siberia of which I am aware, there is little doubt that this ant must have a continuous distribution westwards throughout the northern coniferous forest to Scandinavia where it is so abundant. *F. acqulonia* Yarrow was unexpectedly common right in the south of Finland at Salo and Kouvola in spruce forest as well as in the centre and north from Pieksamaki to Rovaniemi. Hölldobler (1944) describes the nesting habits of this ant, under the name of *F. rufa rufo-pratensis*, in N. E. Karelia. In particular he refers to girdle nests, i.e. flattened domes with steep sides covered in vegetation. These are a typical feature of the landscape as one proceeds northward by train. In the Helsinki Museum most of the *rufa* group species are assembled together under such names as '*polycтена*' and '*major*' and a high proportion of these are *F. acqulonia* which is probably the commonest wood ant in Finland.

True *F. rufa* L. was only seen at Ruissalo and Turku in the south-west and at Savonlinna in the south-east. *F. polycтена* Foerst is the most hairless form of this group of species. Betrem (1960) includes Finland in its range and I have a single worker which was collected for me outside Helsinki which has the characteristics of this species. In 1958, I recorded *F. polycтена* from Hauerseier in Norway and Stockholm. I have now found it in Sweden also at Åhus in Skåne, Alvesta and Boxholm in Småland and Nyköping in Södermannland. At Nyköping the colonies were quite typical as in the Netherlands (Elton, 1958) with smaller nests grouped round a central larger nest, but at

Alvesta only a single isolated mound was seen while in the other localities, the form of colony grouping was not distinguishable from that of nearby *F. rufa*.

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## Paucity of Lepidoptera in Inverness-shire

By Captain C. Q. PARSONS

I stayed with a relation in a house about 500 feet above Drumnadrochit from 17th May until 1st June 1961. On the first night it was warm and cloudy. Moths, which appeared to be mostly ermines, showed up in some numbers in the headlights of a car shortly after midnight on the way home from a party. At my bedroom window, lit for a short time by an ordinary electric light bulb, *Pheosia gnoma* Fab. and *Anagoga pulveraria* L. arrived. I thought this was a good omen, but during the next fortnight the nights were cold and unsuitable for light. Twice I tried sugaring, and not a moth appeared.

During the daytime, sometimes in bright sunlight, the only moths I saw were three *Ematurga atomaria* L., two *Ortholitha mucronata* Scop. and two unidentified pugs. On 28th May, near Tomintoul across the border in Banff, I took one *Hadena bombycina* Hufn. settled on the heath, but saw nothing in flight.

As regards larvae, every juniper bush contained swarms of *Eupithecia sobrinata* Hübn. and *Thera cognata* Thun. Two of the latter hatched on 25th June, whereas some I had collected in Co. Mayo I found newly hatched on my return on 2nd June. In Inverness-shire I got nothing by beating birch and oak, which I did only during daylight. In the garden with a torch I got four *Alcis repandata* L. since hatched, of a lowland form, and several *Leucania pallens* L. small and stung. On the moors I found a cocoon of *Orgyia antiqua* L. spun up on heath. The first of the ova thereon hatched the same day, and they continued to do so for some days. The only other vegetation in the vicinity of this site was stunted birch thirty yards away. The larvae eventually took to heath, having refused birch, willow and broad-leaved dock mentioned by Mr. Lanktree. They are still feeding on heath, much to my disgust as I am overrun with dock while heath is a mile away.

I notice that Commander Harper only mentions one *pulveraria* in his original list of lepidoptera for the county and omits *antiqua*. I have not got a list of his additions, so perhaps I have nothing to be grateful for. In conclusion, I saw one *atalanta* about 20th May.

Tunney's Orchard, John's Row, Westport, Co. Mayo. 10.vi.1961.

## Notes and Observations

TIME OF EMERGENCE OF BISTON STRATARIA HUFN.—On 26th February, a very mild day, while walking in woods near Virginia Water, I spotted, at the foot of an oak tree, a male oak beauty with its wings limp over its back. The time was just 11 a.m., thus indicating a definite time of emergence.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 10.iii.1961.

A MELANIC FORM OF HEMEROPHILA ABRUPTARIA THUNB. AT WOKING.—The only waved umber I have taken here this year, on 26th April 1961, was of the melanic form, ab. *fusca*, which has apparently not been noted from this area previously, but I gather it is steadily spreading from the Metropolis, where it is quite frequent even in the central area, in the squares of Mayfair and around Hyde Park.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 16.vii.1961.

CYCNIC MENDICA CLERCK; A REMARKABLE ABERRATION.—The muslin moth has been one of the few insects that has been unusually common in this lean year, and on 7th May I was amazed to find in my trap here a specimen having the right side of the normal male dark coloration, while the left two wings were pure white like those of the female, but with slight shading at the tip. The hair on the body and thorax is exactly divided with dark ones on the right and white on the left-hand side. The right side antenna is that of a normal male with strong pectinations, while the left antenna is much shorter and has very small pectinations, but is not completely filiform as in the normal female. Mr. Goodson tells me he has never heard of a similar specimen of this insect, in which gynandrous specimens are almost unknown.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 16.vii.1961.

**DRYMONIA TRIMACULA** ESP. IN THE HIGHLANDS.—While collecting with Mr. J. L. Messenger on 18th June 1961, a very blustery night, in the vicinity of the Loch Awe Hotel, we were surprised when among a good many visitors to our mercury vapour light was a marbled brown, somewhat larger than those from the south.

Barrett (III; 135) notes its record from Clydesdale, while South (I; 68) says it is rarely met with in Scotland, and I have never heard of it so far north.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 16.vii.1961.

**CELERIO GALII** ROTT. IN LINCOLNSHIRE.—A male bedstraw hawk moth in fresh condition was taken in my mercury vapour trap on the night of 21st July in my garden at Boston. I have had to wait a long time for this, my second specimen, since my first was taken on 28th July 1912 at valerian at dusk in my father's garden in Boston.—R. E. M. PILCHER, 39 Spilsby Road, Boston, Lincs.

**SOME DIPTERA: NEMATOCERA AT PETT LEVEL IN MARCH.**—On the 28th March this year I was with some friends on the East Sussex coast and was able to spend about half an hour looking for Diptera in the Pett area. At the time it seemed probable that I would not be able to find anything at all as the Pett Level is a bleak area of flat coastal marsh, and on this particular day looked very sullen and windswept. Finally I decided to go over the sea-wall and have a look around the beach. The tide was halfway out revealing a large expanse of mud, shingle and low, algae-smeared rock. A steady cold wind was blowing from the sea and about the only available cover for insects were the various groynes and breakwaters which extended over part of the beach, so I began to look around the sheltered lee sides of these. Surprisingly, numbers of insects were soon found, all of them Diptera: Nematocera. There was one Tipulid; *Limonia* (*Dicranomyia*) *chorea* Mg., one species of Ceratopogonid, *Culicoides pulicaris* (L.) which was very common, and five species of Chironomid, *Anatopynia* (*Macropelopia*) *nebulosa* Mg., *Metriocnemus* (*Paraphaenocladus*) *impensus* Walker, *Hydrobaenus* (*Psectrocladius*) *sordidellus* Zett., *Hydrobaenus* (*Smittia*) *pratorum* Goetgh., and *Chironomus* (s.str.) *dorsalis* Mg. Single examples only were taken of *A. (M.) nebulosa*, *M. (P.) impensus*, and *H. (P.) sordidellus*. Several *C. dorsalis* were noted and the *H. (S.) pratorum* was the commonest insect there. Although the Nematocera number amongst themselves several littoral and marine species, none of those taken fall markedly into these categories and it would seem probable that they had either been blown, or had flown to the beach over the sea-wall or perhaps from the cliffs which start a little way to the west, although this would have to be proven. The possible exception to this is *H. (P.) sordidellus* which has been found breeding in the Clyde and the larvae would not seem at all averse to salt or brackish water. It was a pleasant surprise to have such an uninviting locality reveal so much material in the half-hour available, and it does emphasise the amount of work still to be done in these groups and also the number of discoveries still to be made by those prepared to spend a little time on them.—P. ROPER, Little Slides, Robertsbridge, Sussex. 20.vii.1961.

## Current Literature

*The Moths of the British Isles*, by Richard South, Fourth Edition, 1961. Warne, Two Volumes, 70/-. Since 1907, when the first edition appeared, it is safe to say that there is hardly a lepidopterist in the country who did not cut his teeth on "South", and that all who did so have retained the book as their standard work on the British macrolepidoptera. This first edition was reprinted three times; a second edition was produced in 1920 and reprinted three times; a third edition appeared in 1939 and was reprinted four times, and now we have this long-awaited fourth edition.

The serious onslaught on nomenclature made in recent years called for a thorough revision of the text of the third edition, which was undertaken by Mr. Edelsten, and the many species added to the British list since the introduction of the mercury vapour lamp as a means of collecting, demanded that these species should be illustrated. The colour photograph plates hitherto in use were showing signs of wear, and the publishers decided that it was time to have a fresh series of plates prepared. They put the matter of the coloured plates in the capable hands of the late Mr. H. D. Swain, who most regrettably died at an early age while on holiday, before he could see his great work in the hands of the public. It is a trick of illustrators when dealing with delicate subjects, to make their drawings to an enlarged scale, so that the finished article, reduced to life size, has a better finish than the original drawings, but the beautiful figures produced by Mr. Swain were drawn natural size, and the fine quality of the plates is a marvellous tribute to his work.

Many of the black and white plates illustrating the early stages have been kept as in the earlier editions, but to these have been added four new plates by Miss A. Walters, and the text is embellished with photographs by Mr. J. D. Bradley. Wanderers, species newly established in this country, and species newly discovered here, including the division of some portmanteau species are included in this work, and even though some of the species added must be looked on as occasional stowaways in aircraft and shipping, it is of immense value to lepidopterists that they should have illustrations at hand with which to compare such insects, should they come their way.

The text has been brought right up to date as the work went to Press, having been revised by the late Mr. Edelsten and Mr. Fletcher with the help and advice of Mr. W. H. T. Tams, and the order of the genera is brought into line with the latest conception of the matter, so that although one may well expect new species to be added to the British list from time to time, lepidopterists may well feel that they have now at their disposal something on which to rely for some years to come.

The original "South" was a classic, and the publishers are to be congratulated on having preserved its classical status through the many printings of the past half century, and this status has been enhanced by the inclusion of references to the original descriptions or first records of the species in this country in the text descriptions of the added species. With the new plates illustrating many more species and the revolutionized nomenclature (which one may, without undue optimism, regard as approaching stability), no serious collector can neglect to add this new edition to his bookshelves.—S. N. A. J.



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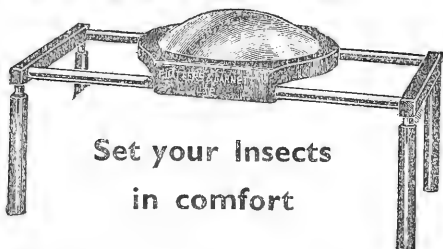
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# Notes on *Zygaena* species from the Pyrenees, Lepidoptera: Zygaenidae

By W. G. TREMEWAN

(Department of Entomology, British Museum (Natural History))

The following notes are based on some species of *Zygaena* collected in the Pyrenees by Mrs. V. M. Muspratt and the late Guy T. Adkin. The Adkin collection is now preserved in the British Museum (Natural History).

I wish to express my thanks to Mrs. Muspratt for sending me the material in her collection and for presenting to the British Museum (Natural History) the holotype and allotype of the new subspecies described below.

## ***Z. hippocrepidis centripyrenaea* Burgeff (comb. nov.)**

*Zygaena transalpina centripyrenaea* Burgeff, 1926, Mitt. münchen. ent. Ges., 16: 82.

Burgeff described the Pyrenean populations under the name of *centripyrenaea* without citing a type locality. Reiss (1930: 41) gives Vernet-les-Bains, Pyrénées-Orientales. Three specimens of *hippocrepidis* were taken by Mrs Muspratt at Gavarnie, Hautes-Pyrénées. I tentatively place them under this subspecies.

## ***Z. filipendulae seeboldi* Oberthür**

*Zygaena filipendulae seeboldi* Oberthür, 1910, Léop. Comp., 4: 543.

One five-spotted male of *filipendulae* taken at St. Jean-de-Luz, Basses-Pyrénées, 15.viii.1958, is referable to ssp. *seeboldi* Oberth. which was described from Bilbao, Spain.

## ***Z. trifolii muspratti* ssp. nov.**

♂, 28-35 mm. wingspan. Ground colour of forewings black with a blue gloss. Forewing spots and hindwings bright scarlet tinged with crimson. Terminal border of hindwings narrow, blue-black in colour. Head and thorax black, abdomen blue-black.

♀, 33-37 mm. wingspan. Coloration similar to that in the male but ground colour of forewings with a greenish gloss. Abdomen with shorter hair and rather more glossy blue-black in colour.

Holotype ♂, Le Lac, St. Jean-de-Luz, Basses-Pyrénées, 6.v.1961, leg. V. M. Muspratt; allotype ♀ with the same data.

Paratypes: Le Lac, St. Jean-de-Luz, Basses-Pyrénées. 6 ♂♂, 1 ♀, 5-12.ix.1958; 5 ♂♂, 3 ♀♀, 1-26.v.1959; 2 ♂♂, 30.v.60; 49 ♂♂, 14 ♀♀, 30.iv.-17.v.1961, leg. V. M. Muspratt; 2 ♂♂, 1 ♀, 24.v.1951, leg. G. T. Adkin.

This new subspecies shows the usual individual variation that occurs in *trifolii*. In the above mentioned series are three males and one female which are ab. *orobi* Hübn.; five males and one female are ab. *basalis* Sélys-Longchamps; six males and six females are ab. *minoides* Sélys-Longchamps, and one male is ab. *sexmaculata* Oberth. A female, which has the spots as in ab. *glycirrhizae* Hübn. has the crimson-tinged, scarlet coloration replaced by vermilion in both the forewing spots and hindwings.

This new subspecies differs from ssp. *trifolii*, which is from Frankfurt, by its larger size and brighter coloration. Although it is more closely related to ssp. *palustris* Oberth. from Rennes it differs strongly by its bright crimson-tinged, scarlet spots and hindwings. In *palustris* the red coloration is almost a pure scarlet. Specimens of the latter subspecies are slightly larger and the forewings are broader and more rounded at the apex. Compared with ssp. *aquitania* Le Charles from the Dropt Valley, Mesterrieux, Gironde, ssp. *muspratti* differs by its brighter coloration and bluer ground colour of the forewings. In my opinion ssp. *muspratti* is nearest to ssp. *hibera* Verity which was described from Oviedo, Spain. I have not seen specimens from this locality but according to examples illustrated by Reiss (1930, pl. 4a) *hibera* is not so bright in coloration and the wings are broader. According to Verity's description (Verity, 1926) the red coloration of *hibera* is carmine with a very weak blue content. The blue content in the scarlet coloration of *muspratti* is conspicuous.

Mrs. Musprat informs me that a second generation occurs regularly in September but the specimens of this autumn brood are never so numerous. I have seven specimens before me and they differ from the spring generation by their smaller size (24-32 mm. wingspan) and narrower and more pointed forewings. In coloration, however, they are quite similar to the spring generation.

In the collection of the British Museum (Natural History) are further specimens of *trifolii* from St. Pierre d'Irube, B.P., ex collection G. T. Adkin. These specimens are referable to ssp. *muspratti* Trmn. Four specimens from Barescon, Val d'Aspe, B.P. (leg. G. T. Adkin) are not referable to ssp. *muspratti* and are probably a new subspecies. Further specimens are needed from this locality to confirm this opinion.

## **Z. *lonicerae major* Frey**

*Zygaena lonicerae major* Frey, 1880, Lep. Schweiz, p. 67.

A series of *lonicerae* was taken at Gavarnie, Hautes-Pyrénées, 1357 m. in July 1960. The *lonicerae* from Vernet-les-Bains, Pyrénées-Orientales have previously been placed under ssp. *major* Frey (Tremewan, 1961) but probably represent an undescribed subspecies. The same applies to the specimens from Gavarnie which I temporarily place under ssp. *major* Frey. The latter subspecies was described from the Alps, the type subspecies emanating from St. Nicolas.

## REFERENCES.

- Reiss, H. 1930. In Seitz, Macrolep., Suppl., 2: 1-50, pl. 1-4.  
Tremewan, W. G. 1961. *Bull. Brit. Mus. (nat. Hist.) Ent.*, 10 (7): 302.  
Verity, R. 1926. *Ent. Rec.*, 38: 9.

# The Subgenera of the Genus *Zygaena* Fabricius, Lepidoptera: Zygaenidae

By W. G. TREMEWAN

(Department of Entomology, British Museum (Natural History))

Twenty-two subgenera have been erected within the genus *Zygaena*



F. Although certain of these subgenera have been criticised by some workers as being unnecessary, it is not my intention here to discuss or consider the status of each subgenus, but merely to give a citation of the type species. If a designation has already been made I give a reference to where it was first published. Otherwise the citations, which are initialled W.G.T., are my own and will date from the publication of this paper.

## GENUS

*Zygaena* Fabricius, 1775, *Systema Entomologiae*, p. 550.

Type species: *Sphinx filipendulae* Linné, 1758 (*Zygaena filipendulae* (Linné)), by subsequent designation, Latreille, 1810, *Considérations Générales*, p. 441.

= *Anthrocera* Scopoli, 1777, *Introductio ad Historiam naturalem*, **10**: 414.

Type species: *Sphinx filipendulae* Linné, 1758 (*Anthrocera filipendulae* (Linné)), by subsequent designation, Westwood, 1840, *Synopsis of the Genera of British Insects*, p. 89.

## SUBGENERA

*Mesembrynoidea* Holik & Sheljuzhko, 1958, *Mitt. münchen. ent. Ges.*, **48**: 271.

Type species: *Zygaena cambysea* Lederer, 1870, by original designation, Holik & Sheljuzhko (*loc. cit.*).

*Coelestis* Burgeff, 1926, *Lepidopterorum Catalogus*, **33**: 29.

Type species: *Zygaena cuvieri* Boisduval, 1829, W. G. T. selected.

*Hesychia* Hübner, 1819, *Verzeichniss bekannter Schmettlinge*, p. 116.

Type species: *Sphinx laeta* Hübner, 1790, by subsequent designation, Holik & Sheljuzhko, 1953, *Mitt. münchen. ent. Ges.*, **43**: 219.

*Peucedanophila* Burgeff, 1926, *Lepidopterorum Catalogus*, **33**: 19.

Type species: *Sphinx cynarae* Esper, 1789, W.G.T. selected.

*Santolinophaga* Burgeff, 1926, *Lepidopterorum Catalogus*, **33**: 18.

Type species: *Zygaena corsica* Boisduval, 1829, W.G.T. selected.

*Yasumatsuia* Strand, 1936, *Folia. zool. hydrobiol.*, **9**: 167 (new name for *Hyala* Burgeff nec Adams).

Type species: *Zygaena loyselii* Oberthür, 1876, W.G.T. selected.

= *Hyala* Burgeff, 1926, *Lepidopterorum Catalogus*, **33**: 15 (preoccupied by *Hyala* Adams, 1852, *Ann. Mag. nat. Hist.*, (2) **10**: 359. *Mollusca*).

Type species: *Zygaena loyselii* Oberthür, 1876, W.G.T. selected.

*Cirsiphaga* Holik, 1953, *Ent. Z.*, **62**: 153.

Type species: *Sphinx brizae* Esper, 1797, by original designation, Holik (*loc. cit.*).

*Mesembrynus* Hübner, 1819, *Verzeichniss bekannter Schmettlinge*, p. 119.

Type species: *Zygaena pluto* Ochsenheimer, 1808 (= *Zygaena purpuralis* Brünnich), W.G.T. selected.

*Agrumenoidea* Holik, 1937, Ent. Z., **51**: 132.

Type species: *Zygaena johannae* Le Cerf, 1923, by original designation, Holik (*loc. cit.*).

*Coelestina* Holik, 1953, Ent. Z., **63**: 15.

Type species: *Sphinx sedi* Fabricius, 1787, by original designation, Holik (*loc. cit.*).

*Agrumenia* Hübner, 1819, Verzeichniss bekannter Schmettlinge, p. 116.

Type species: *Sphinx onobrychis* Schiffermüller & Denis, 1775 (= *Zygaena carniolica* Scopoli), W.G.T. selected.

*Lycastes* Hübner, 1819, Verzeichniss bekannter Schmettlinge, p. 118.

Type species: *Sphinx exulans* Reiner & Hohenwarth, 1792, W.G.T. selected.

*Lictoria* Burgeff, 1926, Lepidopterorum Catalogus, **33**: 20.

Type species: *Sphinx achilleae* Esper, 1781, W.G.T. selected.

*Usgenta* Holik & Sheljuzhko, 1956, Mitt. münchen. ent. Ges., **46**: 237.

Type species: *Zygaena huguenini* Staudinger, 1887, by original designation, Holik & Sheljuzhko (*loc. cit.*).

*Libania* Holik & Sheljuzhko, 1956, Mitt. münchen. ent. Ges., **46**: 94.

Type species: *Zygaena graslini* Lederer, 1855, by original designation, Holik & Sheljuzhko (*loc. cit.*).

*Peristygia* Burgeff, 1926, Lepidopterorum Catalogus, **33**: 25.

Type species: *Zygaena anthyllidis* Boisduval, 1829, W.G.T. selected.

*Eutychia* Hübner, 1819, Verzeichniss bekannter Schmettlinge, p. 117.

Type species: *Sphinx rhadamanthus* Esper, 1793, W.G.T. selected.

= *Anthilaria* Hübner, 1819, Verzeichniss bekannter Schmettlinge, p. 117.

Type species: *Sphinx lavandulae* Esper, 1783, W.G.T. selected.

*Aeacis* Hübner, 1819, Verzeichniss bekannter Schmettlinge, p. 117.

Type species: *Sphinx ephialtes* Linné, 1767, W.G.T. selected.

= *Polymorpha* Burgeff, 1926, Lepidopterorum Catalogus, **33**: 65 (pre-occupied by *Polymorpha* Soldani, 1791, Testaceogr., **1** (2): 114. Protozoa).

Type species: *Sphinx transalpina* Esper, 1782, W.G.T. selected.

= *Biezankoia* Strand, 1936, Folia. zool. hydrobiol., **9**: 167 (new name for *Polymorpha* Burgeff nec Soldani).

Type species: *Sphinx transalpina* Esper, 1782, W.G.T. selected.

= *Burgeffia* Holik & Sheljuzhko, 1958, Mitt. münchen. ent. Ges., **48**: 229 (new name for *Polymorpha* Burgeff nec Soldani).

Type species: *Sphinx transalpina* Esper, 1782, W.G.T. selected.

*Thermophila* Hübner, 1819, Verzeichniss bekannter Schmettlinge, p. 117.

Type species: *Sphinx viciae* Schiffermüller & Denis, 1775 (= *Zygaena meliloti* Esper), by subsequent designation, Holik & Sheljuzhko, 1957, Mitt. münchen. ent. Ges., **47**: 144.

*Silvicola* Burgeff, 1926, Lepidopterorum Catalogus, **33**: 10.

Type species: *Zygaena chaos* Burgeff, 1926 (= *Zygaena erebus* Staudinger), W. G. T. selected.

*Zygaena* Fabricius, 1775, Systema Entomologiae, p. 550.

Type species: *Sphinx filipendulae* Linné, 1758, by subsequent designation, Latreille, 1810, Considérations Générales, p. 441.

= *Anthrocera* Scopoli, 1777, Introductio ad Historiam naturalem, 10: 144.

Type species: *Sphinx filipendulae* Linné, 1758, by subsequent designation, Westwood, 1840, Synopsis of the Genera of British Insects, p. 89.

*Huebneriana* Holik & Sheljuzhko, 1957, Mitt. münchen. ent. Ges., **47**: 144.

Type species: *Sphinx lonicerae* Scheven, 1777, by original designation, Holik & Sheljuzhko (*loc. cit.*).

## The Present Status of *Euphyia bilineata* L. ab. *isolata* Kane

By H. C. HUGGINS, F.R.E.S.

This striking aberration of *bilineata* was taken by Kane on the Tearaght, an isolated rock near the Blaskets, about eight miles from the coast of Kerry. It is uniform blackish-brown in colour, with a very few obscure markings.

The Tearaght, which from the shore appears as a huge gaunt pyramid, but which from the sea can be seen to have three ascending humps on its north-western face, is most difficult of access, both from the currents and surf, and the inadequacy of any landing stage. It is uninhabited except for the keepers of its light-house. To my knowledge, it has only been visited by two entomologists, although several ornithologists have been there in the past, Kane, and Dr. Kettlewell in 1947. Kane, as is well known, had a large yacht, so that he could choose his day and weather for visiting any of the islands, whilst Kettlewell made arrangements to cross on the relief vessel for the light-house that goes from Valentia. On his way over, however, the wind and sea became so rough that he could not land from a boat, but had to jump with the aid of a rope in circumstances of considerable danger.

When he arrived, the wind was so strong that all collecting was impossible, except for gathering heads of sea campion for larvae, from which *Hadena caesia* Bork. and *H. lepida* Esp. ssp. *capsophila* Dup. ab. *suffusa* Tutt were bred. As these may be obtained on any headland in Kerry where the foodplant grows (by no means everywhere), I feel his pluck was insufficiently rewarded.

In 1912 my late friend B. A. Bower, who was a close friend of Kane's, told me that on Kane's last visit to the Tearaght he had found that the grassy slope on which *isolata* lived had been swept away in a storm and that the moth was now probably extinct. Since that date, nothing new has been published about it, although in a recent correspondence, Dr. Kettlewell has suggested to me, and I am inclined to agree with him, that it may still exist there. This does not mean that there is necessarily the slightest chance of capturing it; as anyone who has worked the Kerry cliffs knows, moths may exist on miles of coast, but only in one or two places is access to them possible.

Both Bower and the late Dudley Westropp told me that Kane had informed them that *isolata* was the only form of *bilineata* found on the Tearaght. This contrasts strongly with the other extreme forms such as *hibernica* Prout, which are always outnumbered by yellows.

Very few specimens of *isolata* exist in collections. Kane's series is in the National Museum at Dublin. He, however, gave a number to Westropp, who was quite generous with them to his friends. The series in Westropp's collection at his death, is in the Rothschild-Cockayne-Kettlewell collection at the British Museum, Tring, but he gave me a perfect female in 1930 and a male in 1949, and a few years before he died, he gave one to Mr. E. S. A. Baynes, with characteristic generosity telling him to take his pick. I also possess a third, a female, given to Bower by Kane as a recognition of his work in making out the index to his Catalogue: this, after several changes of ownership passed to Mr. H. D. Bessemer's collection and was purchased by me when he sold his geometers. All my three specimens are simply labelled "Tearaght, Kerry", in Kane's writing; Kane was often deplorably laconic in his labelling. I know of no others in private hands, though probably there are several, as both Kane and Westropp were most generous with their insects.

In 1952, Mr. J. E. Flynn, well known to all in the Bantry Bay district as a sportsman-naturalist, told Mr. E. S. A. Baynes that he would be visiting the Blaskets the following year with a party of ornithologists. Mr. Baynes then told him of Kane's discovery of *isolata* on the Tearaght and of Dr. Kettlewell's fairly recent visit there, and the possibility of its being extinct in that locality. Mr. Baynes, however, stressed that it might exist in one of the other isolated islands, and described it to Mr. Flynn and asked him to keep a sharp lookout for it. The result was that Mr. Flynn took three specimens on Inishvickilaun, the remotest of the Blaskets, which he kindly sent to Mr. Baynes. One of these was referred to Dr. Cockayne, who agreed it was *isolata*, it is now at Tring, where I saw it recently.

Since then Mr. Baynes and I have been making attempts for a joint trip to Inishvickilaun, and this summer (1961) managed to make the necessary arrangements.

The island is only accessible in fine weather, with the wind in a certain quarter, as the very small beach on which it is possible to land must be protected from the wind by the island to make the landing from a dinghy possible. We were also warned to take an ample supply of food as the island is uninhabited and should the wind shift a few points, it might not be possible to take us off again for a day or so. We arrived at Dingle, the nearest town to provide a motor-boat, on 2nd July, but although the weather was very fine, it was not until

7th July that the motor-boat proprietor would risk the venture. Even then, the crossing was no joke, and everyone was completely wet through in spite of waterproofs, the currents in Blasket Sound and the passage between Inishvickilaun and the next island are very tricky, and caused a lot of bumping.

The quantity of sea birds seen was wonderful, as Mr. Baynes wrote to me subsequently, the sea trip (which was rather expensive) was worth it for that alone. We saw sixteen kinds without counting shore birds such as curlews and oystercatchers. These were cormorant, shag, gannet, greater black-backed, lesser black-backed herring, black-headed, common, and kittiwake gulls, common and black guillemots, razor-bill, puffin, fulmar and manx shearwater, and a tern, either arctic or common; both species nest in Kerry and it is impossible in my opinion to separate them on the wing. The most interesting to me were the manx shearwaters and fulmars, which were often only five or six yards off us. I have often seen both before, but never at such close range; I was particularly impressed by the hooked beak of the shearwater and the way the fulmar carries its head; I had always supposed it was carried horizontally in the manner of a gull, but it flies with the beak inclining at a sharp angle, at least forty-five degrees.

In due course we effected a safe landing and began to climb the zigzag path on the high cliff from the beach. About half way up, Mr. Baynes disturbed a black moth from some vegetation, he was unable to strike at it and I missed it by about two inches; Baynes thought he saw it go into my net, but I knew I had missed it and saw it go away and settle in an inaccessible position on the cliff face. We agreed it was undoubtedly *isolata*, we had both been catching the extreme forms of *hibernica* during the previous part of the week, and this was a much blacker insect. Unfortunately, this was the only one we saw. We worked two other places where the cliff was accessible and also every weed bed, bracken slope, and stone wall on the island without seeing a further *bilineata* of any kind. The only other insect seen was a very lightly marked, somewhat worn form of *Eudoria angustea* Steph., of which we each took one, though that taken by Mr. Baynes died and completed its ruin on the way home. We each picked a small bag of sea campion heads from which we obtained a good many larvae of *capsophila*, three each of *caesia* and two each of *venosata*.

The result of the trip was certainly disappointing, but it was very satisfactory to see that the moth still exists. The trouble with it is that, like several of the cliff forms of *bilineata*, it only lives on the cliff-face, which is nearly all inaccessible. It is probably also rare on Inishvickilaun; we only saw one, and Mr. Flynn only took three in a week on the island. Luckily the wind did not change, and we got off without misadventure.

On the mainland of the peninsula, we worked what cliff faces were accessible with good results; amongst a lot of yellows we took a good sprinkling of forms round *hibernica*. Mr. Baynes has pointed out to me that our cliff *bilineata* display two tendencies, one in which the wavy cross lines and bands get darker till they reach the true *hibernica* and another in which the forewings from a diffused smoky look get darker and darker until they almost reach *isolata*. This form was very rare, we each only got one, both, unhappily, worn, in a week's work. I might state here that all these darker forms become quickly

rubbed on the disc of the forewing in the net, and it is not easy to box them braced on a rotten shale slope on a cliff face.

The greatest catch to me, however, was a male of the beautiful form ab. *ethelae*, which I had described from a female in 1956 (*Entomologist*, **89**: 1). I described and named this at the suggestion of the late Dr. Cockayne, but as the females of *bilineata* are usually darker than the males, I had a sneaking fear that the male might not exist, and I did not quite like the idea of naming an aberration existing only in the one sex. However, I am glad to report that the male is exactly like the female as previously described.

I should perhaps add that the new edition of "South" states that *isolata* is recorded from "the islands of Dursey and Tearaght off the coast of Cork". This statement is doubly erroneous, the Tearaght is off Kerry and the form of *bilineata* on Dursey Island is *hibernica*, not *isolata*.

Some of our other work on the mainland, particularly with the micros, was very interesting, but these will require further working out and I will deal with them later.

I must express my gratitude to Mr. Baynes for most generously availing me of his notes and experience, and also for his companionship on the whole trip.

## July on the Continent

By S. N. A. JACOBS

My wife and I set out on the perfect morning of 6th July for Lydd airport, and were duly landed at Le Touquet shortly after mid-day. We at once struck east and reached Vitry le Francois in time for dinner and a well earned night's rest. Fine weather was with us all the way, but we saw few butterflies other than Pierids and a few Satyrids. The following morning we set out for Schaffhausen which we reached without adventure by evening. Before leaving on the morning of 8th July, we made a slight deviation to see the Rhine falls, after which we took the road along Lake Constance, over the Fernpass and to Garmisch-Partenkirchen where we decided to stay for a few nights.

On 9th July we set out on a short sentimental journey to Seefeld, one of our first continental collecting holidays having been spent there, our road taking us through Mittenwald, famous for its many painted houses and its violin workshops. Unfortunately, a drizzle set in and although we set out for a round walk at Seefeld, microlepidoptera were not much in evidence. However, a *Diasemia litterata* Scop. tempted me by settling on my trousers, and paid the penalty. The following day was also rainy, and we decided to visit Oberammergau, although the Passion Play was last year. The theatre and costumes, however, were on view, parties being made up according to language, with German, French, English and Spanish speaking guides. This is on the road to Munich, and the mountains are beginning to give way to hilly agricultural land. On 11th July, the morning having cleared up, we went for a walk on the hillside to the south of the town, and here saw many *Crambus* species, including *combinellus* Schiff., *margaritellus* Schiff., *pyramidellus* Triets., *hercynae* Heinemann, *perlillus* Scop., and *culmellus* L.; we also took a fresh *Hypercallia christierna* L., our

Kentish larvae of which species had emerged a couple of weeks earlier. It was very striking to see how quickly the damp grass came to life with insects whenever the rather fitful sunlight broke through.

The next day it rained heavily and continuously, and we could only pass the time by burning petrol and making a circuit of the surrounding country, once more entering Garmisch by way of the Fernpass. On 13th July we set out on a collecting trip to the Eibsee, a pleasant lake, remarkably clear, on part of which swimming and boating took place, and on one shore there was a large hotel, which seemed to be associated with the recreational facilities of the American Army personnel. The surrounding woodland was scheduled as a game reserve, but nothing was said about insects, so I did my best to find something. The usual woodland species were seen in small numbers, and the most interesting was *Clepsis rurmana* L. (*semialbana* Guen.) of which I saw two specimens and was able to take one. This species seems to have disappeared from our British fauna. In the afternoon we visited Innsbruck where we called at the flat of our friend K. Burmann, only to be told that he was collecting in the United States, but were given the latest news of him by Mrs. Burmann.

On 14th July we set out for Linz to visit Joseph Klimesch only to find that he too was away, this time collecting in the Italian Alps, but his niece very kindly entertained us. The weather was fine and hot for the journey to Linz and back, and on the way we saw several of the larger Argynnidids and *Vanessa atalanta* L. beside the Pierids and Satyrids of the roadside. On our return journey, we took the more devious road from Salzburg via Kitsbuehl to Innsbruck, and then on to Oetz for the night. Here the evening was warm and heavy and we went out to explore an area of rough ground, but in spite of the promising conditions, the only insects there seemed to be Tabanidae in numbers, and we retired before them in disorder.

We continued our journey the following morning, and in the early afternoon arrived at Saas Fee where we intended to spend another five nights. This pleasant little town is at the end of the road, and cars are parked and forgotten at the entrance to the town; the parking charge is one franc per day, and this enables one to proceed on foot in all directions. On our first morning we walked down the track to Saas Amagell, a village in the other branch of the main valley, but a small rain began to fall, and it was difficult to get insects to leave their shelter. A few *Argyresthia pygmaeella* Hübn. were tapped out of willow bushes, and young mountain ash bushes produced a few mines of apparently *Nepticula sorbi* Stt. In the afternoon, the weather cleared and we walked through the woods, but little serious collecting was attempted, our bag consisting of two *Melitaea didyma* O.

On 16th, we walked through the wooded lower slopes towards the glacier. Here the spruce trees yielded several largish *Cnephasia*, probably *chrysanthemana* Dup., while one tree harboured a nice pair of *C. penziana* Thbg. *Hemimene ligulana* H.-S. was taken flying amongst the damp herbage. On 17th, we set out along the path towards the Britanniahute, which took us through an open woodland where I decided to work. On the way up to this place, I struck what I suppose was the entomological highlight of the holiday: a beautiful male *Scoparia centuriella* Schiff. flew on to a bush by the path and waited while I boxed it (I had not put up my net at the time). In using the

word beautiful, I mean it, for although a *Scoparia*, this species is about twice the size of the species to which we are accustomed here, and instead of the nondescript greys of our species, it is richly shaded browns. In the wood, *Argyroploce bipunctana* Fab. was flying freely in good condition, but when one has satisfied one's requirements it is apt to become a bit of a nuisance, as it is inclined to take one's eye off more obscure quarry. The first butterfly seen was *Vanessa atalanta* L. followed by *Erebia aethiops* and smaller *Erebias*, *Argynnis cydippe* L., *Melanargia galatea* L., and Pierids, including *Aporia crataegi* L. Other micros taken included *Argyroploce metallicana* Hübn., *Gypsonoma nitidulana* Zell. and *Laodamia fusca* Haw.

In the afternoon, we walked up towards the Alphubel glacier through the botanical reserve, where, beside a fine show of *Dianthus* species, banks of *Aster alpina* made a fine show with its almost luminous purple and gold. On the meadows above this reserve I took several leaves of carline thistle, on which were spinings of the dull green larvae of *Choreutis bjerkandrella* Thbg., some containing full fed larva while in others they had already pupated. Where I had previously met this species, the larvae were feeding in colonies of six to eight on a leaf, but here they were feeding singly; the larva spins a loose web from side to side of the leaf, causing it to form a deep channel, and in this the larva feeds on the upper surface of the leaf. When pupation is due, it spins a long white tube across the leaf, more than double the length of the black pupa. From these, moths emerged from 29th July until 5th August, and two species of braconid parasites emerged. I mention details of the spinning because this is a very widely distributed species, and it has on occasions been recorded from the south-eastern counties of England, and it might be a guide to microlepidopterists working downland in late June/July.

On the following day we left Saas Fee for St. Luc, two valleys to the east, and here we spent the nights of 18th and 19th July. It is a pleasant little village with two hotels, one or two shops, and the usual cottages and wooden granaries or hay-lofts; it is one of the highest villages in Europe that is open all the year round. Here butterflies were seen in very fair numbers when the sun came out, including *Parnassius apollo* L., *A. crataegi*, *Colias europome* Esp., *Issoria lathonia* L., *Euphydryas selene* L. (worn), *Melitaea didyma* O., *M. dictynna* Esp., and *Brenthis amathusia* Esp. Nettles here, as at Saas Fee, were covered by colonies of larvae of *Aglais urticae* L., and an occasional worn adult was to be seen on the wing, as was *atalanta*. Here the micros were also in good numbers and many interesting small fry could be disturbed from the herbage, though *Pempelia ornatella* Schiff. was the most numerous insect, and took one's attention off its betters. There were several small *Tinea* species, which will require careful determination, and well up the mountain side I netted what I thought looked to be a good thing, only to find that it was *Lampronia rubella* Bjerk. It is curious how different a familiar insect may look in unexpected surroundings, but the plentiful supply of wild raspberry canes should have suggested the insect to me. A pleasing little thing was *Brachmia dimidiella* Schiff. which flew low amongst the herbage, but it had the unpleasant habit of many of the small alpine meadow species, of diving down towards the roots, which offer a deep shelter for them, where it is of little use to pursue them, for if eventually boxed they are so



badly rubbed as to be useless. From St. Luc, on a clear day, a very good view of the Matterhorn, Cervin or Cervino, call it which you will, can be had, and on our departure on the morning of 20th, we first ran up to the head of the valley road at Zinal to get a better view of this impressive peak. We then turned round and made for Chamonix, via the Forclaz pass, which has lost its sting since it was remade after the landslide of a few years ago. One of the amusing sights stored in my memory of the old pass is of an ancient car of the over-powered American type of some twenty-five years ago, loaded with students and belching steam, coming triumphantly to the pass; it was emblazoned with a skull and crossbones, and named "La Trompe de Mort". We were fortunately able to get accommodation at our favourite Hotel Belvedere at Chamonix and spent the nights of 20th, 21st and 22nd July there. Most of our time was taken up with driving round the district, but one collecting trip was made up a valley running down to the Col des Montets road. Here a fair bag was obtained, though nothing unduly exciting was included, and on the narrow track which I was working, I encountered a small Renault car, ancestor of the present elegant Dauphine, coming down. It was loaded with an artisan family, Papa, Maman, two children and Grandmère on the back seat. As it passed me, Grandmère lowered the window, and with eyes popping out of her head exclaimed in a loud voice: "Comment est ce possible? un papilloniste avec son filet!"

This really ended the collecting part of our holiday and we left on 23rd, driving to Chatillon sur Seine, and on 24th went on to Compeigne, but my wife felt unwell on the way and wanted to sleep, so we waited a couple of hours in a poplar plantation near Anglure, Seine et Oise, and I worked the roadside scrub from which I brought home mines in oak producing *Tischeria dodonaea* Stt., blackthorn mines producing *Lithocolletis spinolella* Dup., with one *Callisto (Ornix) loganella* Stt. A thing which struck me very forcibly was the entire absence of *Lithocolletis rajella* L. from the leaves of the mountain *Alnus*. In previous years, I have seen the bushes loaded with the mines of this species, sometimes as many as six in a leaf. I must have examined thousands of leaves carefully, and run my eye over millions, but not a single mine did I see, at Saas Fee or at Chamonix. The last occasion when I brought home a few mines in 1959, the percentage of parasites was very high, but some moths did hatch out.

We left Compeigne on the morning of 25th, reaching Le Touquet about noon, and were home in time for tea, after a varied three weeks of care-free liberty.

CRAMBUS CONTAMINELLUS HÜBN. AT BLACKHEATH, LONDON.—With reference to Mr. A. A. Allen's most interesting note (Ent. Rec. 72: 274) of the continued survival of *Crambus contaminellus* Hübn. at Blackheath, I feel it is worth while mentioning that William West in his "The Lepidoptera of the South Eastern District of London" (Ent. Rec., 18: 141-43; 170-73; 198-201; 229-236) makes the following remarks: "Two at rest on fence on Blackheath in September, 1876; never before, nor since, have I seen the species, although I have worked for it."—J. F. BURTON, B.B.C. Natural History Unit, Broadcasting House, Bristol 8. 6.ix.1961.

## The Discovery of the Larva of *Eupithecia innotata* Hufn. in Britain on Sea Buckthorn, with Notes on its Habits, etc.

By PERCY CUE

On 8th June 1958, Mr. S. Wakely and I were dusk-ing among an extensive thicket of Sea Buckthorn (*Hippophae rhamnoides* L.) in Sussex, when he captured a "Pug", and knowing that I was interested in this family, kindly gave it to me. About the middle of July 1958, whilst I was beating Sea Buckthorn bushes in Kent, I took three small larvae unknown to me and which were unlike any "Pug" larva I had hitherto seen. These duly pupated.

When in May 1959 three "Pugs" emerged in my cage, I did not associate them at first with the three larvae taken on Sea Buckthorn in 1958 until I found them to be identical with the moth taken flying over this shrub in June 1958. Baron C. de Worms kindly took all four moths to Mr. D. S. Fletcher of the British Mus. (S. Kensington), who identified them as *Eupithecia innotata* Hufn.

In July 1959 I could find only one of these larvae at the same spot, this I kept under close observation and eventually bred from it another *innotata*, thus proving, at least to my satisfaction, that *innotata* larvae could be found on Sea Buckthorn on the coast of Kent, also probably Sussex. Here I may mention that I had already been struck by South's statement that the first authentic *innotata* were taken at Skegness, because I happen to know that at Skegness there are literally acres of Sea Buckthorn.

The following July (1960) I found twelve of these larvae, which pupated between the 24th July and 2nd August, and from five of these, rather to my surprise, moths emerged about the 22nd August 1960 (one was parasitised), and the rest in May 1961. It is evident, therefore, that there is sometimes a partial Autumn emergence, at least in captivity. In July 1961, I found some more larvae and tried these out on Tamarisk, Ash (young leaves) and Mugwort; these fed without hesitation on the first two but none would have anything to do with Mugwort. I now have a series of moths from larvae taken over a period of four years on Sea Buckthorn, and these Baron de Worms has once more kindly submitted to Mr. Fletcher, who confirms that they are all *E. innotata* Hufn.

The full-grown larva is about  $\frac{1\frac{1}{2}}{2}$ " long, slender, tapered and flattened towards the head. Head flattened. Anal end tapered to a sharp point. Young larvae thred-like. The main colour is rich velvety green, head pale green, spiracular line greenish or yellowish white widening on each segment to form a circle around the tiny reddish spiracles. Often the spiracular line is interrupted between each segment and consists of a series of oblique lines or dashes, the ends of which are just visible on the back. Again, there are sometimes more or less faint dashes on the back of each segment. Below the spiracular line the colour is also rich green, and along the centre underneath part it is greenish-white. Anal tip reddish-brown.

Among the deep green upper and greenish-white undersides of the leaves of its foodplant, the larvae are extremely difficult to detect; and before throwing away debris from the beating tray, one is advised to think twice, because though having been dislodged they are sometimes quick to attach themselves to a leaf or twig.

These larvae are apparently not often parasitised, since only one out of the thirty was so affected; this by the curious parasite *Meteorus versicolor* Wesm (Braconidae), which on leaving its unhappy host pupated swinging by a silken thread in mid-air.

The larvae rest extended along a twig or leaf or between twig and leaf, and if disturbed, like other geometers, they immediately become rigid. They appear only to feed at night and have a habit of nibbling the tips of leaves so that it looks as if the tips have been cut off.

There is little or no change of colour before pupation, no wandering, one day they are there, the next they are gone.

The cocoon is a fairly hard one (certainly not frail) and usually spun on the bottom of the container among debris which adheres to the cocoon. One or two pupated in a fold of the porous paper with which I line the plastic boxes, and in this case the cocoons were semi-transparent, so much so that the pupa therein is visible.

The pupa is about  $\frac{5}{16}$ " long, wing cases and thorax are dark green and the abdominal part brown. Before emergence the upper parts change from green to light brown. The actual change from larva to pupa takes place within seven or eight days.

The moth is on the wing in May and early June (in captivity though, if the pupa is brought indoors, the moths will emerge in April); the second brood specimens (if any) in late August. The larva occurs from July to early August; the second brood examples (if any) in September. My earliest and latest dates for larvae are 6th July and 6th August.

## *Eupithecia innotata* Hufnagel on Sea Buckthorn (*Hippophae rhamnoides*)

By G. M. HAGGETT and J. M. CHALMERS-HUNT

Mr. Cue has been good enough to let us see his Paper on *E. innotata*, which species has for a long time interested us, and of which we have collected the larvae in large numbers from Sea Buckthorn during the past two years on the Sussex coast, and in some numbers during the present year in Kent. We found that larvae could be beaten in quantity from Sea Buckthorn, but not from Tamarisk which was plentiful in the same locality in Sussex, nor from Mugwort in nearby spots (there being no Mugwort close to the Sea Buckthorn). We found larvae equally commonly in both broods in July and again in September. One of us (G.M.H.) tried the larvae from the egg in captivity on Tamarisk, Ash, and Mugwort, and like Mr. Cue found that they could not complete their growth on Mugwort, and although one or two reached last instar, the majority died young: they would not eat the flowers, only the leaves.

Altogether we have beaten about 150 larvae from Sea Buckthorn and reared a good many more from pairings in captivity, but only one

larva was wholly brown, this a wild July specimen from Sussex. None of our larvae was parasitized. There has been little variation in the moths so far and certainly no difference in size and colour between broods reared on different foodplants: nor is there any difference in size between moths of the two broods.

We found that about half of the pupae of the July larvae produced moths in August, and we also had occasional emergences through the winter months from pupae of both July and September larvae.

Mr. Cue's reference to early British *innotata* at Skegness prompts us to ask if there are any specimens of *innotata* from last century and early this that have data or correlated records that prove them to have been bred from Mugwort feeding larvae. There is nothing at all to indicate that the larvae described under *innotata* in Buckler (*Larvae of the British Butterflies and Moths*, 8: 35) were in fact this species, and indeed the illustrations (*op. cit.*, 8, plt. 136, figs. 6, 6a) are certainly not those of *innotata*.

The great significance, it seems, of these Sea Buckthorn feeding *innotata* on the south coast of England, is that they appear to be quite unable to feed up on Mugwort which, on the Continent, is the major (and according to Dietze, the only) second brood food.

MANX SPECIMENS OF *EILEMA COMPLANA* L.—Several specimens of *Eilema complana* L. were taken during August 1960 near Port St. Mary, as recorded *Entomologist*, 93: 240. During this summer the mercury vapour trap was again in operation in the same locality. The weather was poor, and only about half a dozen nights could be said to be perfect collecting nights, but on one of these, 14th August, two male specimens were taken which, like those taken last year, were referable to *ab. sericea* Gregson (northern footman). One of the specimens taken last year was heavily marked with grey scales over about one-third of the hindwings. The two specimens taken this year were less heavily marked with grey, but were similar to the female figured in the new edition of South's *The Moths of the British Isles*, Pl. 21: fig. 2. The wing spans of the five specimens now in my possession are 34.0, 35.0, 35.5, 35.5, and 34.5 mm. respectively.—MICHAEL J. TAYLOR, 8 Patch Lane, Bramhall, Cheshire. 15.ix.1961.

SOME MOTHS AT BROMLEY, KENT.—I would like to record my first *Sterrrha vulpinaria* H.-S. at mercury vapour light here on the night of June 29/30. Two *Amathes ditrapezium* Schiff. turned up on the night of July 9/10 and *Euxoa tritici* L. on the night of July 29/30. *Ditrapezium* seems much more energetic and more difficult to box than its tamer relative *A. triangulum* Hufn. I trapped two *Apamea scolopacina* Esp. here in 1960, one on the night of July 16/17 and the other in the evening of August 1st. Another moth which would appear to have extended its range somewhat since the standard reference books were written is *Parastichtis suspecta* Hübner, which is fairly common here in July. Perhaps I should mention a female *Nycterosea obstipata* Fab. nearly overlooked on a window some yards from the mercury vapour light on the evening of May 12, 1961. She laid eggs readily and the resultant larvae attained maturity with great expedition—the last imago emerging on July 6th: D. R. M. LONG, White Croft, Mavelstone Close, Bromley, Kent. 24.viii.61.

## Various Holidays

By Colonel H. G. ROSSEL

It is three years since I last attempted a note for the *Record*, and it is really only on account of the present appeal for material that I offer the following trivia.

Bodinnick, in 1959-60 and 61, has not produced many surprises, *C. licornica* Esp. in May 1960, *H. armigera* Hübn., and an unusual number of *L. vitellina* Hübn. being the only migrants of special interest. *Peltigera*, *sacraria* and *ni* have been quite absent. There are, of course, always the mysterious singletons of species that really have no business here, e.g. *C. bicuspis* Borkh. in May 1961, *A. caliginosa* Hübn., *N. typhae* Thunb., and *C. pendularia* in August, all of which one assumes were house-hunting in the present urge to turn poor Cornwall into a built-up area.

A telephone call late one night in October 1959 implored me to remove an "unpleasant moth that squeaked" from a Fowey bathroom, a request gladly acceded to the following morning as soon as the ferry functioned, and resulting in a splendid female *A. atropos* L.

I have, however, been able to leave home for considerable periods and go farther afield, thereby making several good friends and visiting areas of this country which I had previously never seen.

In the late summer of 1959 I visited the New Forest for the first time in over 50 years, staying with my late second-in-command at Pilley, near Lymington. His neighbours formed the opinion that my mercury vapour trap in his garden was a device to ripen his apples. Having no generator, I was compelled to resort to sugaring glades in the forest: more and more rum was applied nightly to the brew until at the end of the week I expected the Forest pubs to complain of unfair competition. Modern moths, however, are apparently teetotal, for my one visitor during that week was a rather alcoholic-looking *T. pronuba* L. The only capture new to me, in the trap, was *N. spargani* Esp.

I then went up to Aberfoyle to stay with Colonel and Mrs. Home, old friends for more than 40 years, and in their oak copse took my first *P. bractea* Fabr. and *P. interrigationis* L., besides interesting Scottish forms of other species. *C. Tullia* Mull. and *E. aethiops* Esp. were not in the vicinity.

A visit to Mullion with the Young Moth Hunter at the end of September yielded one *armigera*, but no *A. xanthomista* Hübn., though one of the latter visited the Bodinnick trap on my return.

In April 1960, my old friend Miss Quiller Couch asked me to Trelowarren, Lady Vyvyan's famous wooded estate near the Lizard, but this otherwise pleasant visit produced nothing above the Bodinnick standard of species. A visit to Herodsfoot on a perfect collecting night in June, with Drs. Smith and Clarke and Mr. Puckey, gave a surprising number of species including *D. trimacula* Esp., *B. punctinalis* Scop., *C. ribeata* Clerck, *A. prunaria* L. (in quantity) and a fine female *C. cossus* L.—collected, if I remember rightly, on the back of Dr. Clarke's neck.

In the second half of July, I made the obligatory pilgrimage to Aviemore, and performed the prescribed rite of sugaring the golf course

posts—which, after several generations of collectors, must now be solid sugar to the centre—thereby attracting a few *E. occulta* L. and positive locust-flights of *A. monoglypha* Hufn. The “Burma Road” produced one *interrogationis*, a few *E. caesiata* Schiff., and a number of *C. paludata* Thunb. which I discovered when one obligingly settled on my boot.

My trap, in the garden of “Alt na Craig”, produced a few *A. depuncta* L., *interrogationis*, and *S. anomala* Haw., but nothing else of note. The excellent weather enabled me to collect a few *C. tullia* Mull. as they flitted like pale ghosts over the peat mosses, and, later, *E. aethiops* Esp., a more stalwart but less subtle butterfly to chase. Incidentally, my experience did not support South’s statement that *aethiops* only fly in the sun, though this is quite true of *epiphron*.

What helped to make this visit pleasant was meeting two new friends, Dr. Goodall and Mr. Gardner, who generously gave me every assistance in their power. With Dr. Goodall, I drove up Glen More to try for *I. brunneata* Thunb., incidentally experiencing a yet unexplained incident en route when a long column of female hikers from a holiday camp gave us uninhibited signals of welcome. Subsequent argument as to which of us was the target of these attentions was quelled by our arrival on the *brunneata* moss. With Mr. Gardner, I paid a courtesy visit to the ospreys at Loch Garten (a species last seen by me on Indian and Ceylon “tanks”) and investigated the local beetles—I am glad to say that he has since told me that some particularly obscene yellow grubs we found under the bark of a dead Scots pine have produced one of the rarest of British beetles.

From Aviemore I went again to Aberfoyle to stay with my old friend, Mrs. Home—Colonel Home, alas, having died suddenly since my previous visit. I made several short treks up the Menteith Hills, below which one sees the Carse of Stirling spread out on one side and the Trossachs on the other. The ground is somewhat limited by the Forestry Commissions deer fences, and there is little scope for collecting much in the vast dark blocks of spruce. However, in this case, the Commission (which owns very large areas in this neighbourhood) has not destroyed, as yet, much deciduous woodland, but has planted up bare hillsides. There is, of course, little wild life in these commercial “forests” since there is little or nothing for herbivores (or most birds) to eat. I saw only one roe, and a few signs of red deer on the heather. I am told that these are relentlessly destroyed when opportunity offers.

I took a few day-flying moths on the heather, mostly *E. caesiata* Schiff. and *L. testata* L., *C. graminis* L. was flying in quantity, giving its well known imitation of *interrogationis*. The trap had better results as there are still some fine old oak woods left in the Aberfoyle plain. *Occulta anomala* and *A. xerampelina* Hübn. were present among others. When next I visit Aberfoyle, I hope to do better if my portable generator functions.

In September, Fowey experienced Mr. Chatelain’s phenomenal collecting luck (vide his note in the *Record* for October 1960).

Encouraged by Drs. Goodall and Birkett, I decided to try Wither-slack in 1961, and I never made a better choice. First, however, I had the pleasure of two visits by Mr. Heslop, which enabled him to obtain a species he required. I travelled to Lancaster at the end of June, where Dr. Goodall met me and with his usual kindness drove me to that

delectable hostelry, "The Derby Arms", at Witherslack. With Meathop Moss at one's door for daylight collecting, Black Toms Lane and Witherslack woods at night, and Drs. Goodall and Birkett driving one half over Westmorland and North Lancashire, my luck would have been completely in, had it not been for the failure to function of my recently acquired portable generator. This was redeemed by my friends' kindness in letting me share their lights, in Witherslack woods, at Sandscale, and various other profitable collecting spots. Daily visits to Meathop Moss (owing largely to Dr. Birkett's efforts, still in an unspoilt state), a trap at the Derby Arms, and visits with my friends to Arnside Knott, Sandscale, and Storrs Moss, gave me small series of *tullia* (var. *philoxenus*), *agestis* (var. *salmacis*), *D. sannio* L., *L. salicis* L., *L. quercus* L. (*callunae*), *A. ripae* Hübn., *P. tinctoria* Brahm, *P. captiuncula* Treits., *S. muricata* Hufn., *B. piniaria* L., and specimens of several other species. Mr. Tierney, my host at the Derby Arms, most kindly drove me to the foot of Langdale Pikes, which we managed to ascend, though with two game legs between us, in an hour and a half, to net *E. epiphron* Knoch at the 2,200 foot level. The only flaw in the day was that the hotel bar at the foot of the hill had closed ten minutes before we descended on it.

Before leaving home, I had consulted a certain chain drug store for a really good fly repellent, but when applying this on my first visit to Meathop Moss, the local insects flew at me with delighted cries and licked it off. I was, however, saved by the Royal Navy in the person of Admiral Torlesse, who emerged from the jungle and anointed me with some most effective dope. I was reminded of a night long ago in India, when the citronella I had applied successfully kept off the tiger I was awaiting, but not the mosquitoes. *Tullia* swarmed on the Moss (though many specimens had damaged hindwings) and I was able to send several small series to friends. My great frustration was *A. myrtilli* L., of which I was active enough to take only two—I intend to try No. 9 shot next time to check its snipe-like flight. I ascended Whitbarrow, the 700 ft. limestone bluff above Witherslack, for *P. plantaginis* L. without success, and was told that the hill was about to be covered with conifers by the Forestry Commission. I noticed several good deciduous trees already ringed for destruction, and I assume that the deer I surprised in the lower woods are also doomed.

Referring again to sugar, Dr. Birkett, Admiral Torlesse and I spent a night lamping in Witherslack woods: a quarter of a mile of trees was sugared also, but at the end of an otherwise successful night, not a single moth had been seen on the sugar.

From Witherslack, after a week-end in Dr Goodall's hospitable home at Morecambe, I went to stay with Dr. Clarke at Horton cum Studley, near Oxford. He had generously asked me there to try for *iris*, though he had only just moved into his new house. Alas, much of the local woodland at Shabbington, adjoining what was once Hell Coppice, and famous for *iris* and *camilla*, has been poison sprayed by the Forestry Commission and there was hardly a sign of life over a vast area. We were told that these ghastly operations were to be greatly extended over neighbouring areas of mixed woodland, the object apparently being to replace these woods by stands of spruce for wood pulp. Except for the occasional bark of a wandering deer, there was no wild life in evidence, and the deer themselves have little chance of survival.

Individual members of the Forestry Commission one meets are usually pleasant people, but their "end-effort"—whether intended or not—is the elimination of practically all but coniferous life—vegetable as well as animal—in the interests of more news print. Is it economically essential for Government to destroy our heritage of beauty for such a purpose? This destruction is going on all over Britain, and the more uniformed members of the public seem largely indifferent. I will write no more on this point as I believe that the Young Moth Hunter (whose questions in the *Record* of August 1960 were by no means answered by the apologia of January 1961) may be fusing a rocket on the subject.

Salcey Forest, to which Dr. Clarke drove me, showed one *iris* (not taken) and three *camilla*, two of which were collected. Dr. Clarke's trap at Horton was most interesting in its contents, *C. pyralina* View., *H. immaculata* Thunb., and *X. quadrifasciata* Clerck being of particular interest to me.

Dr. and Mrs. Clarke most kindly drove me back to Reading, whence I travelled to Salisbury, where Mr. Heslop had gone to immense trouble to lay on an attempt at *O. musculosa* Hübn. for me. Putting up very comfortably in a 250-year-old thatched post office in the chosen area, I called on Mr. Woodrow, the local landowner and farmer, who gave me valuable information. A cottager obligingly let me connect my trap with his mains in a most favourable area (my generator was completely out of action), but I was probably too early, in the third week of July, for *musculosa*, harvesting being due in about 10 days, though I haunted the barley fields and examined the reeds on the Avon's banks by day. The trap took *E. ochroleuca* Esp. and numbers of *T. matura* Hufn. among others. *L. coridon* Poda was plentiful on Camp Hill. Mr. Heslop and Lord Bolingbroke (writing to me of the current dearth of insects in the New Forest) both think I was too early for *musculosa*. Mr. Price of Stroud and Mr. Woodrow told me that the insect has spread considerably westward in recent years.

On 21st August, Dr. Smith and I made a long planned visit to Torquay for a "tiger hunt", our distinguished, experienced and generous "shikari" being Mr. Dobson of Exeter, who had taken time off to show us where and how to rouse *quadripunctaria* from its lairs in the ivy. We took seven, some of them excellent specimens, in spite of the threats of a public-spirited citizen "to shoot us". One of Dr. Smith's ladies laid some 40 eggs, which he hopes to rear to tigerhood. Lesser quarry was a *H. vitalbata* Hübn. and a few *O. bipunctaria* Schiff. collected by me later. After seeing Mr. Dobson on to the evening train, we consulted where we should put up Dr. Smith's light. Anstey's Cove car park seemed suitable, but we felt that a cold wind and the presence of several darkened cars might render m.v. both unprofitable and unpopular, so we ran up the coast to Dawlish Warren. Here, after giving a short course in collecting to the interested police patrol, we spread our sheet and took a few *A. vestigialis* Rott. and *L. straminea* Treits.—the catch would have been much better but for the strong north wind. A doze in the car from 3 a.m. to dawn, which was greeted with the remnants of a bottle of sherry, enabled us to make for a Dawlish hotel for a necessary shave, after which Dr. Smith dropped me at my friends' house in Torquay, and collected his way slowly back to Cornwall.



I had the pleasure during early August, of several visits by Mr Price of Stroud, on holiday at Looe, with whom I had long corresponded. He was able to take a few micros from my traps.

Although there certainly seems to be a general scarcity of butterflies this year, I have not noticed a scarcity of moths, except (so far) a dearth of migrants, especially *P. gamma*. How long the current moth population will survive, in view of the Forestry Commission's undertakings, and the poison spraying craze by farmers and local authorities, is a matter for apprehension, for it concerns the continued existence, or elimination, of all wild life in this country.

By way of a postscript, there was a good specimen of *Utetheisia pulchella* L. in the trap this morning (2nd September).

## Seasonal Notes

By Dr. F. H. N. SMITH

During the past three seasons, the trap in my garden has only been operated on promising nights. There has been little of interest. *Selenia tetralunaria* Hübn., the purple thorn, 15th July 1959. *Leucania vitellina* Hübn., delicate, 9th September, and *Nonagria typhae* Thunbg., bullrush wainscot, 17th September 1960. The last named is not at all common in Cornwall. *Rhodometra sacraria* L., the vestal, 29th August 1961. *Aporophila australis* Bdv., feathered brindle, occurs regularly in the autumn.

On 26th June 1960, Colonel Rossel, Dr. R. H. Clark, Mr. Roy Puckey and I had two lamps going in some woodland near Looe. It was a warm, still night and results were good; *Deileptenia ribeata* Cl., satin beauty; *Alcis jubata* Thunbg., dotted carpet; *Mythimna turca* L., double line (in quantity); *Drepana lacertinaria* L., scalloped hooktip; *Hydrelia testaceata* Don., waved carpet; *Leucania pudorina* Schiff., striped wainscot; *Bomolocha crassalis* Fab., beautiful snout; *Cossus cossus* L., goat (one, which arrived very early); *Heterocera asella* Schiff., triangle (one, a very pleasant surprise); *Drymonia dodonea* Schiff., marbled brown; *Craniophora ligustri* Schiff., coronet; *Angeronea prunaria* L., orange moth. Several glow-worms added to the illuminations.

July 1960 was notable for two specimens of *Eustrotia uncula* Cl., silver hook, at a marsh by the local sand dunes here at Perranporth, and *Eilema deplana* Esp., buff footman, on 14th, disturbed from undergrowth in a ride in a conifer plantation near Bodmin. On the cold windy night of 24th September 1960, two specimens of *Stilbia anomala* Haw., both males, came to mercury vapour light at a spot just over the county boundary into North Devon. *Antitype xanthomista* Hübn., black banded, which was hoped for, did not arrive.

This year the only moths worth mentioning are *Panemaria tenebrata* Scop., small yellow underwing, which was flying in the May sunshine near a place called Zelah on the A.30. Mercury vapour light at Dunmere Wood, Bodmin, on 24th June, produced *Stauropus fagi* L., lobster, several males; *Cosymbia linearia* Hübn., clay triple lines; *Chesias rufata* Fab., broom tip, and *Ligdia adustata* Schiff., scorched carpet. Two larvae of *Arctia villica* L., cream spot tiger, found cross-

ing a road on 21st April, produced moths on 6th and 9th June, both males, unfortunately. I searched again in vain for *Panaxia dominula* L., scarlet tiger, in several likely Cornish localities, but had the luck to find four larvae on bramble at Babbacombe on 21st May. These hatched, all female, on 25th and 30th June and 2nd and 4th July. On 18th June I found larvae of *Cucullia verbasci* L., mullein, swarming on ordinary purple buddleia in a garden in Perranporth, and wonder whether this is perhaps a well-known alternative foodplant for the species.

On 21st August, Colonel Rossel and I drove up to Torquay to meet Mr. Dobson, who very kindly showed us round some of his haunts there, and in spite of poor weather we found *Euploeia quadripunctaria* Poda, Jersey tiger, in fair condition; one was sitting on the window of a café where we had tea out in the garden. Another was good enough to lay 39 eggs that night: I released her to continue the good work and have re-read Mr. Postans's and Mr Symes's instructive notes on the rearing of the caterpillars. Later on we tried the lamp on Dawlish Warren, which in spite of a strong northerly wind and moonlight, produced *Agrotis vestigialis* Hufn., archer's dart; *Leucania straminea* Treits., southern wainscot, and *Hydraecia oculea* L., the ear.

A short visit to Scotland at the end of May yielded little in the way of lepidoptera. *Lampropteryx suffumata* Schiff. var. *piceata*, water carpet, was, however, new to me. In Sutherland I had the good fortune to see a pair of golden eagles, both in the air and at rest at quite close quarters—about a quarter of a mile. This was a very exciting occasion, and they are magnificent birds. I spent a good many hours by Loch Ness, mostly between dawn and breakfast time, hoping to see IT, but no luck! Personally, I enjoy the idea of a monster, and should hate it if the gas bubble theory were ever proved.

CELERIO GALII ROTT. AND NYCTEROSEA OBSTIPATA F. IN NORTH WEST SURREY.—On the morning of 25th July last my mercury vapour light trap here contained an example of *C. galii*—the first I have ever had here. It was a very large female, in slightly rubbed condition. It lived in captivity until about 4th August and laid, very slowly, about thirty-five small, bright green eggs, mostly on flowers of *Galium* but some also on twigs. These have, however, shown no signs of hatching and appear to be infertile. Earlier, on 12th July, the trap also yielded a very worn female of *N. obstipata*, which expired after one day without laying.—R. F. BRETHERTON, Ottershaw, Surrey. 25.viii.1961.

BUTTERFLIES IN 1961.—While fully in agreement with Mr. Symes (antea 148) as to the general scarcity of butterflies in 1961, I might mention that *Anthocharis cardamines* L., of which he has seen only two specimens, has been quite plentiful here. In fact, we had the impression that there were more than usual in and about our garden.—F. H. LYON, Sampford Peverell, Tiverton, Devon. 10.ix.1961.

RHODOMETRA SACRARIA L. IN HERTFORDSHIRE.—A male specimen of ab. *labda* Cramer of this species came to the mercury vapour trap in my garden at Arkley on the night of August 31-September 1.—T. G. HOWARTH, Arrochar, Barnet Gate, Arkley, Herts.

# Night Life in Dorset

(SEPTEMBER 1961)

By R. G. CHATELAIN and B. F. SKINNER

Having heard much of the good things which have been taken at Portland, it was with great hopes that we arrived there on the 8th September. Results, of course, seldom come up to expectations, especially in a season such as we are having this year, but a short account of our visit is appended in the hope that it may be of interest to some readers.

As only few parts of the coastline are accessible, we confined our night operations on the two nights we were on the island to a spot on the undercliff near Church Ope Cove. Conditions on the first night were fair—no moon, clear sky, and a temperature of 62° F., which subsequently dropped to around the fifty mark. Two lamps were used and of the forty-two species of 'macros' attracted, the majority were very much back-garden stuff, but we were pleased to see about twenty *Leucochlaena oditis* Hübn. (*hispidus* Gey.), nine *Leucania vitellina* Hübn. and a few *L. l-album* L. all in fairly good condition. A few *Tholera cespites* Fabr. arrived rather late, but were unfortunately past their best. The only geometers of note were three *Gnophos obscurata* Schiff. and several *Scopula conjugata* Borkh. (*marginepunctata* Goeze.). Conditions on the next night were very similar, but far fewer moths turned up, although all the species already mentioned were seen. A single example of *Palpita unionalis* Hübn. was also taken.

It was interesting to note the order in which the species arrived on both nights. *L. vitellina* and *L. l-album* came fairly early, but it was not until about 10.30 p.m. that *L. oditis* started to arrive (although the only female noted came early) and *T. cespites* was one of the last species on the sheet.

During the day we saw only a few *Macroglossum stellatarum* L. at the valerium bloom in company with *Vanessa atalanta* L. and *V. cardui* L.

On 9th September we repaired to Studland Heath where the temperature was 50° F. when we lit up, but rose slightly towards midnight. Apart from *Amathes agathina* Dup. which was fairly common, one *Stilbia anomala* Haw. and a few *Schrankia costaestrigalis* Steph. were the only captures of any note. A visit to a bed of tobacco plants in the vicinity only yielded one tattered *Herse convulvuli* Linn.

A late visitor to the lamp was an irate gentleman with two alsatians who informed us that we were causing a disturbance in the neighbourhood and keeping the local telephone exchange awake. Our surprise at this statement was not diminished by the fact that the nearest habitation was miles away. It seems that, although there is no indication of the fact, Studland Heath is the property of the Bankes Estate and permission to collect is required.

Although by no means a memorable occasion, the trip was enjoyable and served to fill a few blank spaces in the collection. It also provided an opportunity for inspecting the insect collection at Portland Museum which included a var. of *Notodonta tritophus* Schiff. which looked remarkably like *Apamea monoglypha* Hufn., but who are we to criticise?

## The New Edition of South's "Moths of the British Isles"

Admiration for the new edition of this book, for the labour that must have gone into it, for the many beautiful illustrations, including the magnified *Eupithecias* and the figuring of new species and rare migrants, is tinged in my mind with regret, first, that some moratorium cannot be imposed on the continual chopping and changing of scientific names—the only really constant names appear to be the vernacular ones! And, secondly, as a Hebridean collector, that the text has not been brought more thoroughly up to date.

This is something that an interested person naturally looks for: and it is surprising and disappointing to find the existence of several common and long since reported Hebridean species not only not admitted, but in several cases specifically denied. Doesn't anyone south of the Border read the *Scottish Naturalist*? Discovering this state of affairs sent me to my moth trap record book; armed with this and with an adding machine, I have compiled the following totals of captures during the nine years 1951-59 of common species here that have been excluded in this way. These came to the following figures:—

<i>A. exclamatoris</i> 'not north of Moray and Argyll' .....	718
<i>O. plecta</i> 'generally distributed throughout England, Ireland, Scotland (mainland)' .....	78
<i>D. oleracea</i> 'except, perhaps, in the Hebrides, it has been found throughout the British Isles' .....	1094!
<i>O. stabilis</i> 'common throughout the British Isles. except, perhaps, in the islands of Scotland' .....	670
<i>L. conigera</i> 'does not appear to have been noted in the Isles' ...	250
<i>A. lithoxylea</i> 'In Scotland . . . only on the eastern side' .....	39
<i>P. chrysitis</i> 'so far, however, it has not been recorded from the Hebrides' .....	366

In fact, most of these moths had been recorded from the Hebrides as long ago as 1938. Other species, such as *A. prasina* and *S. irrorella*, were recorded from Canna as long ago as 1946 (in the *Entomologist* of March of that year).

Turning to the Sphingidae, it is a pity that no mention is made of the great *atropos* invasion of 1956. And the story of Mr. Raddon and the Spurge Hawk larvae on Braunton Burrows, which has all the appearance of a piece of entomological folklore, is still reproduced, regardless of Mr. P. B. M. Allan's exposure in *Talking of Moths*, pp. 229-231. Surely, if this story was to be repeated, an exposure coming from such a source ought either to have been refuted, or else it should have been added that there was an element of dubiety about the record.

If these comments seem sour I must plead the appalling weather of this summer, which is the worst anyone in the Isles can remember, and which has washed out both lepidoptera and the harvest and left one with time to indulge in criticism of this kind. In spite of these little defects, the new edition of South is a delightful production. Let it be hoped that it will sell so quickly that a new edition will be soon called for, in which the Hebridean records can be brought up to date, and the improbability of Mr. Raddon's Spurge Hawks can be admitted.

Isle of Canna, 14/9/61.

J. L. CAMPBELL

# Notes and Observations

A DILUTE ABERRATION OF *LEUCANIA LITHARGYREA* ESP.—On 27th June Mr. David More of Hockley brought me a moth to name, which he said appeared to be an albino. When I examined it, I found it was a dilute form of *lithargyrea*, and quite new to me. The head, thorax and abdomen are a little lighter than usual, but the forewings are very pale pinkish buff, growing a little darker at the margins, and entirely without markings. The cilia are the usual dark pink. The hindwings are almost colourless in the centre, changing to the usual grey at the base and borders, and the cilia pink as usual. The moth had turned up that morning in Mr. More's light trap, and was alive when he brought it in; he very kindly gave it to me.—H. C. HUGGINS, 65 Eastwood Boulevard, Westcliff-on-Sea, Essex. 4.ix.1961.

*LITHOSIA GRISEOLA* L., f. *FLAVA* HAW.—In his well-known book, *Moths* (1955:71), Prof. E. B. Ford writes of this form, "... though the insect is widespread in Europe, it is said to be dimorphic only in Britain; the pale form being, apparently, unknown elsewhere".

The authors of the revised edition of South's *Moths of the British Isles* (2: 46: 1961) are still more convinced that the form is a pure British one, for they write: "the yellow variety, which by the way is not known to occur abroad . . .", thus confidently copying the original text of South himself of 1908.

I therefore draw attention to a few passages in continental literature, where the form is mentioned. H. de Toulgoët mentions it from Huelgoat (Dep. Finistère) in *Rev. franc. de Lép.* (10: 339: 1946). He discovered two males in the collection of de Joannis, which is preserved in the Musée d'Histoire Naturelle in Paris. One of them is figured (*l. cit.*, Plate 13, Fig. 2).

More localities are known from the Netherlands. In part 3 of the *Catalogue of Dutch Macrolepidoptera* (1938, p. 163), I mentioned nine localities (one of which appeared later to be wrong), and in the eighth supplement to this catalogue (1961, p. 462) thirteen more were added. This means that already 21 Dutch localities are known, where the form is met with, as a rule in one, or a few specimens, but locally it is certainly not rare.

As far as I know, it has not been found in Belgium. Lambillion cites it with a note of interrogation, without stating a locality (*Cat. Lep. de Belgique*: 250; 1906). And Derenne in his supplement to this catalogue (1931: p. 154) writes, "N' plus été signalée".—B. J. LEMPKE, Oude Yselstraat 12iii, Amsterdam — Z.2. 24.viii.1961.

*EUSTROTIA UNCULA* CLERCK IN SURREY.—Referring to Mr. Johnson's letter (antea 167), I have taken *Eustrotia uncula* Clerck at mercury vapour in my garden here at Woking. I also took it on 15th July, 1961 at Thursley. Worplesdon is roughly midway between, and I expect it to be pretty well distributed in suitable parts of the area. *Hapalotis venustula* Hübn. is also found in the same area. It was fairly plentiful at mercury vapour this summer near Thursley.—J. A. C. GREENWOOD, Woodcote, Horsell Park, Woking, Surrey. 28.viii.1961.

CAT'S WHISKERS.—Apropos of your note (*antea*, 152), the Rev. Octavius Pickard Cambridge and Mr Eustace Bankes always used cat's whiskers. The former taught me to do so. I prefer it for small insects. Hare's whiskers are very good, but fox's are no good at all. Cats shed their whiskers regularly and if you have friends who keep cats, ask them to look out for whiskers dropped on the carpet of the rooms the cats frequent. Those of male cats are better than those of females. Pickard Cambridge used to put his micros under chloroform, set them, and then prevent them from coming out of the anaesthetic. I have latterly used ammonia as the killing agent and dispensed with chloroform.—W. PARKINSON CURTIS, 131 Princess Road, Bournemouth, Hants. 22.viii.1961.

TRICHIUS FASCIATUS (L.) (COLEOPTERA: SCARABAEIDAE) IN INVERNESS-SHIRE.—A young viewer of the B.B.C. television programme "Out of Doors", Angus MacKenzie (age 9½), sent us a beetle for identification recently, which proved to be the very local species *Trichius fasciatus* (L.). He found this specimen visiting the flowers of some species of Umbelliferae on 2nd August 1961, at Foyers, about twenty miles from Inverness. Foyers is situated at 400 feet above sea level on the south side of Loch Ness. The habitat apparently consisted of steeply rising rocky ground covered with heather and birch, and bordered on one side by an oat field. Angus MacKenzie tells me this is the only occasion on which he has ever seen this conspicuous beetle.

According to Linssen, in his "Beetles of the British Isles" (1959), *fasciatus* is restricted to North Wales (mainly Snowdonia), and is very local. It has also been recorded from the south of Wales and Scotland, but it seems worthwhile publishing this Scottish record.—J. F. BURTON, B.B.C. Natural History Unit, Broadcasting House, Bristol, 8. 24.viii.61.

[I understand that this species has its main stands in the extreme south-west of England and in the Inverness-shire mountains, where one can be pretty sure of finding the insect if a search be made. It is, however, apparently absent from localities elsewhere which would seem suitable for its requirements. Your young correspondent is to be congratulated on his interest, and let us hope that he will keep it up through the years.—Ed.]

CUCULLIA ABSINTHII L. in CAMBRIDGESHIRE.—In 1939 on leaving the Isle of Portland, I took with me, for old time's sake, a plant of common wormwood to my next home in Kent. On leaving there in 1945, I removed it to my present address in Cambridgeshire where the original plant and cuttings taken from it continue to flourish. A few days ago I took to my great satisfaction, and surprise, twelve larvae of the wormwood shark on the new plants, now two years old. I am certain that none were there in former years, so this possibly represents a new county record. I have failed to find the larva on mugwort in the area, so after twenty odd years, I once more have *absinthii* resident in my garden. *Hadena compta* Schiff., by the way, is still in the garden since 1956, but the original host plants are nearly finished.—GUY A. FORD (Rev.), Balsham Rectory, Balsham, Cambridgeshire. 12.ix.1961.

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*Wanted.*—Seitz, A. Macrolepidoptera of the World, Vol. I. Barrett, C. G. British Lepidoptera, Vols. X and XI of large paper edition with coloured plates. All other recent literature on European Butterflies. Dr. Neville Birkett, 3 Thorny Hills, Kendal, Westmorland.

*Wanted.*—Living pupae or ova of *Pieris brassicae wollastoni* and *P. b. cheiranthi*, for experimental breeding. I should be very grateful to anyone holidaying in Madeira or the Canary Islands who can obtain even a few specimens. Will be glad to refund expenses of airmail and to supply specimens of any interesting crosses obtained.—Brian O. C. Gardiner, 43 Woodlark Road, Cambridge.

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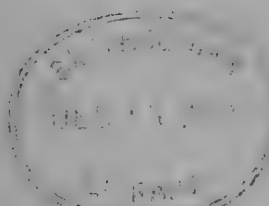
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# A New Species of *Zygaena* from Gibraltar, Lepidoptera : Zygaenidae

By W. G. TREMEWAN,

Department of Entomology, British Museum (Natural History)

A series of *Zygaena* specimens in the Rothschild collection had been incorrectly determined by Rothschild as the nominate subspecies of *fausta* L. Although superficially resembling *faustina* Ochs., an examination of the genitalia revealed them to be more closely related to *fausta* L. The specimens were taken in and near the Alameda gardens at Gibraltar by J. J. Jacobs, who recorded them as *Zygaena baetica* Rambur (Jacobs, 1913). There are further specimens in the collection of Burgeff who considered them to be *faustina baetica* Ramb. (Burgeff, *in lit.*). The genitalia of the Burgeff specimens are illustrated by Haaf (1952) under the name of *baetica* Ramb. The true *baetica*, however, is only found in Malaga.

## *Zygaena gibraltarica* sp. nov.

*Zygaena baetica* Rambur, Walker *nec* Rambur, 1890, *Trans. ent. Soc. Lond.*, 1890: 380.

*Zygaena baetica* Rambur, Sheldon *nec* Rambur, 1908, *Entomologist*, **41**: 216.

*Zygaena baetica* Rambur, Ribbe *nec* Rambur, 1909/12, *Iris*, **23**: 358 (*partim*).

*Zygaena baetica* Rambur, Jacobs *nec* Rambur, 1913, *Ent. month. Mag.*, **49**: 234.

*Zygaena fausta baetica* Rambur, Haaf *nec* Rambur, 1952, *Veröff. zool. Staatssamml. Münch.*, **2**: 139.

♂, 26-30 mm. wingspan. Head black, thorax black with vermilion collar, the latter almost absent in some specimens. Abdomen black with dorsal part of segment 5 vermilion, valvae black. Ground colour of forewings blue-black or greenish-black with a slight gloss. Forewing spots deep vermilion, 1 and 2 confluent, 2 outwardly edged with light yellow ochre, spots 3 and 4 confluent by the narrow surrounding rings which are light yellow ochre in colour. Spot 5 narrowly edged with light yellow ochre and there are traces of the same colour surrounding spot 6 which is often confluent with spot 5. Hindwings vermilion with black terminal border widest at apex and terminating just before the tornus. Cilia of forewings light brown, cilia of hindwings dark brown.

♀, 32-34 mm. wingspan. Coloration similar to that in the male, but vermilion colour is lighter and brighter. The forewing spots are larger than those of the male and have wider yellow ochre rings.

Holotype ♂, Gibraltar, 10.v.1910, J. J. Jacobs; allotype ♀, Gibraltar, vi.1887, J. J. Walker, in collection British Museum (Natural History).

Paratypes, Gibraltar: 4 ♂♂, 10.v.1910, J. J. Jacobs; 1 ♀, v.1887, J. J. Walker; 3 ♂♂, 16-26.ix.1911, J. J. Jacobs; 1 ♀, 2.ix.1958, C. W. Mackworth-Praed, in collection British Museum (Natural History); 5 ♂♂, v.1887, J. J. Walker; 1 ♀, v.1908, W. G. Sheldon; 2 ♂♂, 1 ♀, ix.1887, J. J. Walker, in Hope Department of Entomology, University Museum, Oxford; 1 ♂, 2.ix.1958, *leg.* and collection C. W. Mackworth-Praed.

A second generation occurs in September and differs from the spring generation by its smaller size and the tendency of the forewing spots to coalesce. In the hindwings of the female the vermilion coloration is warmer and tinged with orange while the terminal border is extremely narrow, even at the apex.

This new species is very distinct and the dark vermilion of the spots and hindwings readily separates it from *fausta* L. It is larger than any known subspecies of *fausta* and is thus comparable with *Z. murciensis* Reiss. Reiss (1922) described *murciensis* as a subspecies of *fausta* from a series of specimens taken on the Sierra de Espuña, Murcia. Later, Reiss (1930) considered *murciensis* a subspecies of *baetica* Ramb., which was followed by his placing both as subspecies of *faustina* Ochs. (Reiss, 1933). According to the genitalia, *baetica* is closely related to *faustina*, but *murciensis* is more closely related to *fausta*. Reiss (*in lit.*) now considers that *murciensis* is a good species and should be separated from *faustina* and *fausta*. Alberti (1958) has placed *faustina* and its subspecies *baetica* as a vicarious species of the North African *Z. algira* Dup. occurring in the South, *Z. fausta* occurring in the North. It is thus reasonable to consider *murciensis* and *gibraltarica* as vicarious species of *fausta*.

According to Walker (1890) and Sheldon (1908) the larvae of *gibraltarica* feed on *Coronilla glauca* L. The species *algira*, *fausta*, *faustina* and its subspecies *baetica* have all been recorded on several *Coronilla* spp. with the exception of *C. glauca* L. The oval, glossy-white cocoon is similar to that of *fausta*.

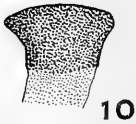
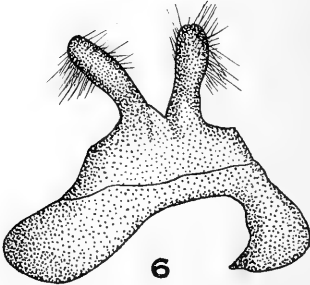
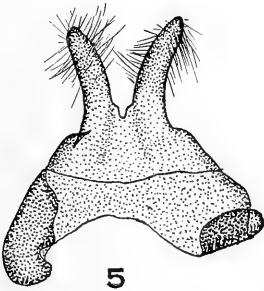
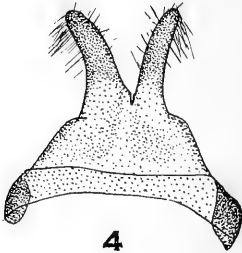
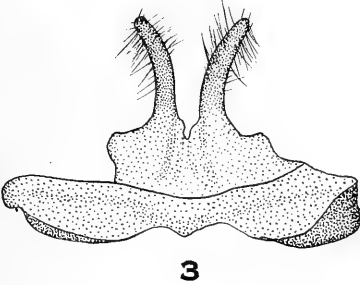
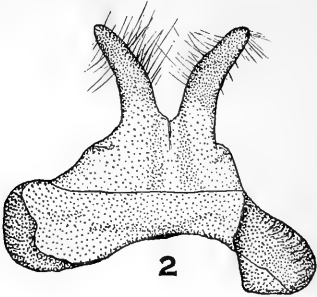
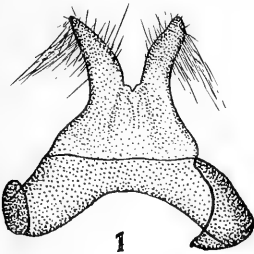
The accompanying plate depicts drawings of the genitalia of *gibraltarica*, *murciensis*, *faustina* and various subspecies of *fausta*. In spite of slight differences between the genitalia of the subspecies of *fausta* they all have a great similarity as is also noticeable in *murciensis* and *gibraltarica*. The horns of the uncus of *faustina baetica*, however, are much thicker, with a blunt, rounded apex in comparison with that of *fausta*.

*Z. gibraltarica* differs from the known subspecies of *fausta* by its larger size, broader forewings and hindwings, and darker vermilion spots and hindwings. The vermilion abdominal belt is also narrower and confined to one segment whereas in *fausta* this belt is usually present on two segments. The valvae of *gibraltarica* are completely black but in *fausta* the valvae are vermilion or scarlet. Even in *fausta jucunda* Meissner and *fausta genevensis* Millière, which have the scarlet coloration strongly reduced or absent in the collar and abdominal belt, there are traces of scarlet on the valvae.

My thanks are due to Col. C. W. Mackworth-Praed for presenting to the British Museum (Natural History) a female of the autumn generation of *gibraltarica* Trmn. Acknowledgment is due to Mr. E. Taylor, Hope Department of Entomology, University Museum, Oxford, for the loan of material from their collections.

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## LEGEND TO PLATE VII.

Figs. 1-6, male genitalia of *Zygaena* species.

Figs. 7-10, female genitalia of *Zygaena* species.

- 1 *Z. gibrattarica* Trmn., ♂ uncus. Gibraltar.
- 2 *Z. murcensis* Reiss, ♂ uncus. Sierra de Espuña, Murcia.
- 3 *Z. fausta fausta* L., ♂ uncus. Nice, Alpes-Maritimes.
- 4 *Z. fausta agilis* Reiss, ♂ uncus. Thuringia.
- 5 *Z. fausta apocrypha* Le Charles, ♂ uncus. Digne, Basses-Alpes.
- 6 *Z. faustina baetica* Rambur, ♂ uncus. Malaga.
- 7 *Z. gibrattarica* Trmn., ♀ ostium. Gibraltar.
- 8 *Z. murcensis* Reiss, ♀ ostium. Sierra de Espuña, Murcia.
- 9 *Z. fausta fortunata* Rambur, ♀ ostium. Charente-Inférieure.
- 10 *Z. faustina baetica* Rambur, ♀ ostium. Malaga.

## Notes on Lepidoptera and Other Insects in Dorset, 1961

By B. R. BAKER

When planning the time of our holidays for 1961 one of the deciding factors was the date on which my young son was due back at school and another was the desirability to avoid the nightly swarms of *Triphaena pronuba* L. as much as possible. The Dorset coast can produce some wonderful insects, but when several hundred *pronuba* are also in the trap the condition of some of the other species present leaves more than a little to be desired.

We decided on the last week of August and the first of September, and by 5 p.m. on the 26th August we were back on the familiar Dorset cliffs west of Swanage. During the operation of "the laying out of cable" the rain streamed down, the hills were hidden in mist and the sea was somewhere down below, but by 6.30 p.m. the rain clouds and mist had gone and, as if to cheer us up, a late-in-the-day *Macroglossum stellatarum* L. was hovering over some valerian.

At 6 a.m. the following morning an inspection of the trap showed little of interest. As was to be expected, *Amathes c-nigrum* L. was abundant, so too were *Amathes xanthographa* F., *Plusia gamma* L., and *Triphaena pronuba* L.! *Caradrina ambigua* F. was present in small numbers as were *Schrankia costaestrigalis* Steph. and *Scopula marginipunctata* Goeze. We were obviously too early for the several interesting autumnal species which are to be taken on this stretch of coast so consoled ourselves with the thought of 2 weeks by the sea with probably very little setting to do.

That evening soon after switching on the lamp, sea mist began to shroud the cliffs—it was warm and moths readily came to the light. At 9 p.m. a yellowish species settled for a moment outside the trap and then was lost among the circling crowd. Soon afterwards it was partly visible on one of the egg trays and my wife helped me by lifting off the transparent cone and we were able to box the specimen. It buzzed vigorously in the box so we retired for supper and examined the unknown afterwards. It proved not to be *Heliothis armigera* Hübn.

as I had suspected but a very fresh *Leucania vitellina* Hübn. Before we retired for the night at 11.30 p.m., seven *vitellina* had arrived, all of them in wonderful condition.

The trap count next morning of all species was 731, mostly made up of the commoners noted on the previous evening plus several *Peridroma porphyrea* Schiff., and single specimens of *Pheosia tremula* Clerck, *P. gnoma* F., *Aspitates ochrearia* Ross and *Nomophila noctuella* Schiff. A further 15 *L. vitellina* Hübn. made the unexpected night's count of this species 22. During the night of 28th/29th August, 5 more *vitellina* appeared and then we saw no more until the end of the week, 4 days hence; in fact over this period, of the lepidoptera which were trapped, none was worth recording. Insects were, however, not inactive as, for example, on the 30th August when 147 corixids were found in the trap amongst 470 moths. Trichoptera, too, were freely taken on almost every night but these were only of 3 species: *Limnephilus lunatus* Curt., *L. affinis* Curt., and *Stenophylax permistus* McLach.

The bird population of this stretch of coast was also very active as evidenced by the early morning arrival of stonechats, wrens and tits to the area immediately surrounding the trap. The stonechats in particular were most persistent, and from our windows we were able to watch these delightful little birds systematically working along the cliff ledges in search of insects which had taken refuge there. The green woodpeckers, too, were regular visitors and would clumsily, as if with great effort, hop along the ledges, stopping for some moments to stab at some particular spot, until they were within a few feet of our living quarters. In view of the hazards that the moths had to contend with from the nightly halo of bats and the attention paid to them by the birds from dawn onwards, the trap and examined contents were taken away and covered over during the day and the moths released at dusk at a point further around the headland.

During brilliant sunshine on the afternoon of 30th August, some attention was given to the Orthoptera, an order of insects for which Dorset is justly famed. Dr. D. R. Ragge had very kindly told me of the precise area for *Decticus verrucivorus* L. which he had rediscovered in Dorset in 1955, but although several careful searches were made for this impressive bush cricket none was found. We were, however, successful again, thanks to Dr. Ragge, in finding the very local bush cricket *Conocephalus discolor* Thun. of which a compact colony exists close to the sea at one of Dorset's impressive coves. On the cliffs at Swanage, *Tettigonia viridissima* L. was heard stridulating most evenings, its penetrating call carrying far up the rocky slopes, but in spite of the hot sunny weather during our stay this large bush cricket was not heard during the daytime. In previous years we have heard the call during daylight from Swanage, Corfe and other localities in the Isle of Purbeck, even when journeying by motor cycle the sound could well be detected from the grassy road verges. Perhaps we were rather too early in the season to hear *viridissima* at its best. *Pholidoptera griseoptera* Deg. was another species which could be heard most evenings on the cliffs and on two occasions male specimens were taken at the light trap!

Sir Robert Saundby visited us on 31st August, very thoughtfully bringing along the recently published new edition of South. We re-read the account therein of *vitellina* and speculated on this migrant's

presence in other places on the south coast but did not know at that time of any definite records.

For the next two nights sea mist was prevalent and with it several new species came to the lamp. *Leucania l-album* L. just out and very fresh appeared on 1st September and again on 2nd September, together with single specimens of *Ammogrotis lucernea* L., and *Ennomos quercinaria* Hufn. These, and *vitellina*, were the most interesting of the 44 species noted that night, the most prominent species was without doubt *Plusia gamma* L. A young entomologist friend who was spending a few days with us found some difficulty in going to bed at all during his stay and he reported to me next morning, 3rd September, that the *gamma*, of which there were over 100, had almost all appeared around 3 a.m.

The hot weather of our first week's stay now seemed to be breaking up, and thunder storms and heavy rains were frequent. In these thundery conditions moths abounded, and on the night of 3rd September it seemed wisest to spot check the trap contents before midnight, release the majority a distance away and then restart afresh. 381 moths were present at 11.45 p.m. and these included single specimens of *Amathes agathina* Dup., *Leucochlaena hispida* Gey., and *Gnophos obscurata* Schiff. There were also 10 *vitellina* and 88 *gamma*.

At 06.30 hours the next morning there was a further 1,011 moths in the trap including 5 *vitellina* and 205 *gamma*, the rest were all common species.

This pattern of the single uncommon visitor and many commoners was to take place throughout the following week, by the end of which we had recorded a total of 70 *Leucania vitellina* Hüb. n.

As far as other migrants were concerned they were few and well dispersed over the fortnight. A single *Vanessa cardui* L. was observed on 8th September, but *Colias croceus* Fourc. was not seen at any time. Less than half a dozen *Macroglossum stellatarum* L. were noted and only 4 *Nomophila noctuella* Schiff.

The *vitellina* kept alive for ova waited their time and it was not until we were back in Reading, when some of the moths had been kept for some 15 days, that the hoped for eggs began to appear. At the time of writing the larvae are in their 3rd instar and growing steadily.

71a Berkeley Avenue, Reading, Berkshire. 3.x.1961.

**PLUSIA CHALCITES ESP. IN NORTH CORNWALL.**—While working an m.v. lamp at Welcombe Mouth, on the north Devon-Cornwall border, in the company of Col. H. G. Rossel, an unidentified Plusiid appeared on the sheet among a multitude of *Plusia gamma* L. This turned out to be a male specimen of *P. chalcites* Esp. which I recognised when boxed, having taken several in Tenerife in October 1960.

I have not yet heard of any further captures of this species in the British Isles this year. However, one would expect that a relatively large influx may have occurred, in view of the relative abundance of other irregular immigrants this Autumn, especially *Leucania vitellina* Hüb. n.—C. J. GOODALL, M.B., B.S., 2 Derwent Avenue, Morecambe, Lancs.

## Notes from Dorset

by H. SYMES

Two years ago (*Ent. Rec.* 71: 162 and 252-3) I made some adverse comments on conditions at Hod Hill, largely due to the absence of rabbits and presence of cattle. Last summer, owing mainly to the bad weather, I did not even visit the locality. This year I am glad to report a great improvement in the state of affairs, and during the late summer, the Hill was looking more like its old self. The second brood of *Lysandra bellargus* Rott. was very strong, and there was plenty of devil's bit scabious in flower. Provided that the place is not over-run with cattle in the late spring, prospects for entomologists next year seem to me to be very favourable.

On 22nd August I visited Hod Hill with the Rev. F. M. B. Carr. The weather was cold and windy and there was little sunshine. Two male *bellargus* were taken and a good many *Polyommatus icarus* Rott. were seen resting low down in the herbage, very loth to fly. I took a ♂ ab. *arcuata*. On 29th August Mr. Carr and I went there again. It was a brilliant hot day. *L. bellargus* males were abundant, the females were only just beginning to come out. A few *Lysandra coridon* Poda were still on the wing. I had a good view of two *Vanessa cardui* L. in beautiful condition, the only specimens that I have seen or heard of this season. *Aglais urticae* L. was present in fair numbers and I saw one *Vanessa atalanta* L. Mr. Carr and I paid our third visit to the Hill on 20th September, a warm day with no wind and hardly any sun. *L. bellargus* was still out in large numbers, but most of the males were very worn. Some of the females were perfectly fresh, and I took two or three nicely marked specimens. It was easy to examine the butterflies as they were rather sluggish and I picked up one ♂ ab. *obsoleta*. I also took a very beautiful form of *P. icarus* ♀, but the biggest surprise was a *Rhodometra sacraria* L., whose appearance was most unexpected in such a poor season for migrants.

I paid two visits to Morden Heath, on 10th and 20th July, but did not see *Coscina cribaria* L. or *Heliothis maritima* Grassl. Even *Plusia gamma* L. was scarce. This scarcity was also very noticeable with larvae: many of the common species I did not see at all. On August 16th, Mr. Carr and I went to look for larvae of *Cucullia lychnitis* Ramb. in its Dorset 1 locality. He found one small one, which rather unexpectedly completed its growth: as a rule, small larvae found at so late a date do not long survive. On our way back to Bournemouth we looked in on Ferndown Forest (not very near Ferndown) and found a dozen larvae of *Scoliopteryx libatrix* L. of various sizes. They were all in a very confined area of a few square yards, and I have never seen so many together before. Feeding in an exposed position at the top of sallow shoots, these larvae are very much exposed to attacks by their enemies, and more than half of them turned out to have been "stung" by a dipterous parasite. These flies were smaller than, but similar in appearance to, those which I have bred from *Arctia villica* L., *Macrothylacia rubi* L. and *Apatele aceris* L. but differed from them in two respects: each *libatrix* larva harboured only one parasite, as against three or four in the case of the other species I have mentioned, and the

parasite larva pupated inside the skin of its host instead of breaking through it and pupating in the open. *S. libatrix* spends a very short time in the pupal state: none of my larvae started to spin up until two or three days after 16th August and a moth emerged on 7th September. Three more had emerged by 14th September and one pupa was a dud. The other larvae had been "stung". The moth emerges early in the morning, before 7 a.m. B.S.T. I saw one drying its wings at 6.50 a.m.

Not far from Ferndown Forest we found a full-grown larva of *Sphinx ligustri* L., and on September 7th I found two more at Badbury Rings. Here Mr. Carr and I were joined by Brigadier Warry. We beat the beeches in the avenue for larvae of *Drepana cultraria* Fab. without the slightest success. These larvae are very erratic in their appearance. In some years, notably 1955, they are very plentiful, in others they do not appear at all. A few *Bena fagana* Fab. were beaten from the beeches, and about a dozen *Gastropacha quercifolia* L. from small blackthorns and hawthorns. Neither *Apatele psi* L. nor *A. tridens* Schiff. nor *Craniophora ligustri* Schiff. was seen, and only one or two *Lophopteryx capucina* L., sometimes so abundant at Badbury Rings on hawthorn.

On 12th September I drove to the Glanville's Wootton locality to meet Brig. Warry and Miss Pengilly. In the morning, while they were beating for larvae, I wandered round the rough fields with my net. There were plenty of patches of flower, but no butterflies, not even *Lycaena phlaeas* L. *P. gamma* however, was more plentiful than I had seen it this year. I searched some small birches and willows and found one larva each of *Notodonta ziczac* L. and *Drepana lacertinaria* L. Brig. Warry beat a few *Pseudoips bicolorana* Fuessly, one *N. ziczac*, one *N. dromedarius* L. and one *D. lacertinaria*. After lunch I joined them with my tray and soon knocked a *Dryobotodes protea* from oak and a larva of *Atolmis rubricollis* L., but there my success ended.

The last fortnight of September saw an enormous influx of *P. gamma* and on 26th it was swarming in vast numbers in a clover field near Badbury Rings, but there was no sign of *R. saccharia* in the stubble fields.

## Notes on the Microlepidodtera

By H. C. HUGGINS, F.R.E.S.

**Immigrants:** I intend shortly writing a note on immigrants generally in the present season, but I think it may be of interest to state what I have and have not seen so far. I saw three or four *Nomophila noctuella* Schiff. in early June, but have not seen a single specimen in August and September. The same applies to *Hapalia ferruginalis* Hübn., there were a few about in the early summer, but I have seen none of the usually abundant late summer and early autumn ones. I have recently been working stubble fields for *Rhodometra saccharia* L., of which a few specimens have occurred locally. When I did the same in 1947 *ferruginalis* was in all the fields in hundreds, but this year I have seen none. This is all the more curious as *Plusia gamma* L., which was also very scarce in the early summer, is now present in myriads. Twice during the past week I have had at least 500 in one night in the mercury vapour trap. I have also seen no *Plutella maculipennis* Curt.

**Eucosma maritima Westwd. (candidulana Nolcke):** The little variegated larva of this tortricid is to be found in September feeding on the seeds of *Artemisia maritima*. I have just had a query as to the best method for bringing it through the winter, as it is one of those exasperating larvae that spin in the autumn and do not pupate until the spring, apparently solely to spite the collector by drying up in the winter. My best plan, I always found, was to get a 17" flower pot, put in about 7" of fairly light earth on top of good drainage, throw all my *Artemisia* stems into it, and after fixing a piece of muslin over the top, leave it out on the garden path. At the end of July and beginning of August, the muslin can be taken off early every evening and any moths that have emerged can be boxed. This method is good for all such insects as spend the winter in the larval state. Anyone, however, who lives near a locality for this species, as I did when at Sittingbourne, may take it easily on a warm evening buzzing over the food-plant or sitting on it. My series is labelled August 4th/10th.

## The New 'South'

The long-awaited revised edition of Richard South's "Moths of the British Isles" has at last been published and must now be in the hands of most serious students of British Lepidoptera. In the preface, the editors state that a new edition having become necessary, it was deemed a fitting opportunity to bring the subject matter more into line with our present knowledge of the structure, habits, distribution and nomenclature of the species considered therein. Scarce and occasional visitors have been included, together with the species which have established themselves in this country since South's day.

Perhaps because the advent of this book has been so eagerly awaited, one feels a sense of disappointment now that it is here. The editors, and quite rightly, have attempted a revision of the original classic rather than to write a new book, but many may feel, as I do, that so much stress has been laid on preservation of the original form, that an opportunity to make our standard textbook infinitely more useful has been lost. In the following remarks, the examples I quote all come from vol. 1, to which all page references refer, but the same generalisations apply to vol. 2, which could furnish examples similar to those I have used.

One of the most irritating features of South's masterpiece was the lack of system with which the facts were presented: sometimes the distribution of a species is dealt with first, sometimes last; descriptions of imago, field notes, accounts of early stages and so on are often jumbled together in one paragraph, though sometimes separate paragraphs are devoted to one or other aspects of the treatment of a species. Surely it would have been an advantage to present the accounts in the new edition more systematically, especially when the addition of an appendix 'to bring the subject matter more into line . . . ' merely adds to the chaos, e.g., on p. 358 an account of the larva is placed between the early records of *Catocala fraxini* L. and the statement that it now seems to be established in two localities.

Of course it is not necessary to give detailed descriptions of the imago of all species in an illustrated book of this sort, but one feels strongly that more space should have been given to notes on distinguishing 'difficult' species. This has been attempted somewhat arbitrarily with *Procus* and *Cucullia*, but where genitalia are important surely line drawings of these structures should have been included in the text. If space were at a premium, they could have replaced some of the very wishy-washy photographs which appear. In the case of *Hydraecia*, quite a lot of text is devoted to description of colour and pattern of the four critical species, but I am personally unaware of any wing character or combination of characters which gives an infallible means of determining the species. Though in the cases cited and elsewhere, most useful references are given to papers on the genitalia, these are not always readily accessible, and a summary should appear in the work under discussion. A few notes on the manipulation of genitalia, to encourage the beginner and make him less afraid of tackling the structures, would have been useful in the introduction. While on the subject of critical species, it is noted with some concern that Wightman's paper on *Aporophyla lutulenta* Schiff. and *A. luneburgensis* Freyer in *Ent. Gaz.*, 6: 217-223, is not mentioned. The present work includes the two species under *lutulenta* without comment.

The up-to-date nomenclature and taxonomy is invaluable, but discussions of general points should be included above the genera concerned and not in an account of one of the species. Thus on pp. 158-159 *Triphaena-Noctua-Euschesis* is discussed under *E. janthina* Schiff. By some accident, *Calamia tridens* subsp. *occidentalis* Cockayne (p. 327) is placed between *Enargia paleacea* Esp. and *E. ulicis* Staud.!

It is a great pity that the botanical names used in the text are still woefully out of date. A host of examples could be listed, but I will mention only one which is also an inconsistency. On p. 237, bladder campion is referred to, correctly, as *Silene cucubalus* (no author, as everywhere else); on p. 181 and elsewhere the old name of *S. inflata* is used for the species. In any event, the scientific names are scattered thinly and at random through the text and in most cases the common names only are given. It would have been better to omit the botanical names altogether. Incidentally, Scotch Fir (p. 193) caused a wince, and so, too, did 'flagellae' (p. 71)!

On the whole, the range of variation within the species is dealt with satisfactorily for a book of this size, though more could have been said concerning local forms, e.g. of *Celaena haworthii* Curt. in the Broads and North Britain, and of the continued appearance and spread of melanics.

A verbal description of the early stages is extremely difficult if it is to be useful, and my own opinion is that it would have been helpful to allot more space to the habits of these stages. For instance, in mentioning the recent spread of *Cucullia absinthii* L. no correlation is made regarding the spread of the larva from *Artemisia absinthium* L. to *A. vulgaris* L., without which colonisation of the inland towns would not have been possible. Far too many larvae still seem to eat 'low plants', especially when young. Such unhelpful remarks should be omitted.

Probably the worst part of the new book is that dealing with distribution of the species. On p. 141 is found one of the few cases where the present state of knowledge is really well summarised: this concerns a rather uncommon moth whose history has been well documented by R. F. Bretherton. His papers are referred to, and a good summary is given. Too often though, noncommittal or downright misleading statements are made. On p. 245, for instance, the remarkable assertion, taken from the old edition, is made that records exist of *Dasyampa rubiginea* Schiff. . . . having been taken at light, perhaps the latest of these being that of a specimen captured at Exeter on 11th April 1906! Our present knowledge of the distribution and comparative abundance locally of *Xylomyges conspicularis* L. lies in the fact that it comes so readily to m.v. light, yet the book says that though the moth has occasionally been found at rest on isolated tree trunks or on posts, it has rarely been captured in any other way. On pp. 179-180 we read that *Hadena dysodea* Schiff. is found especially in Cambridgeshire. It was in South's day, and the present edition tacitly acknowledges that something is wrong by mentioning four isolated records since 1918, none of them from Cambs.! There are many instances where well-known extensions of the known range of a species have been omitted. The editors are in error when they say that the five specimens of *Hydraecia hucherardi* Mab. taken after the first two recorded were captured at Dungeness. In fact, they were taken between Rye and Appledore.

In the case of the famous migrants, especially the hawk moths, a great list of occurrences in the last century is given, followed by the remark that the species has been taken in greater or lesser numbers almost every year since 1906. Surely a more balanced summary could have been achieved without destroying the essential character of South?

Regarding distribution abroad, I see that many species still extend as far as Amurland, wherever that may be!

The illustrations by the late Mr. H. D. Swain are for the most part extremely accurate and, in their original state, lovely to behold. What a shame that so many of the plates are slightly off register, in all the copies I have so far examined. The only illustrations of that variable little moth *Nycteola revayana* Scop. are in a poor black-and-white photograph on p. 356, and one cannot help feeling that figures by Swain would have been much more valuable. It would have been an advantage to give page references to the relevant text against each illustration, as in other recent Warne publications.

All in all, the new 'South' reminds me of the fine ship that was spoilt for a ha'p'orth of tar.

19.ix.1961.

B. GOATER.

To the Editor,  
The Entomologist's Record.

25th September, 1961.

Dear Sir,

I read with much interest and astonishment, on page 198 of your September issue, the review "The Moths of the British Isles" by Richard South, Fourth Edition, 1961, Warne's Wayside & Woodland Series. What you say is correct so far as it goes, but you omit all comment and criticism of the faults which mar this otherwise splendid work. Hence my astonishment.



The pity is that with a little trouble and intelligence these faults could have been avoided.

First, the insects are not numbered on the coloured plates, though the legends below each plate name the insects by reference to numbers. Sometimes one has to count the insects on the plate to find out from the legend what is the insect's name. The figures of larvae etc. on uncoloured plates are properly numbered. The earlier editions of 'South' numbered the figures on both the coloured and uncoloured plates. Now to omit these numbers on the coloured plates is a retrograde step which is both infuriating and incomprehensible.

Secondly, the text page on which an insect is described is not noted on the plate legends. This useful cross reference is in general use—for example in Beirne's "British Pyralid & Plume Moths" in the same Series. The plates are often well away from the relevant text, and the figures are at times in an order different from the text. Thus, taking a plate at random, plate 55 facing page 141 of Vol. 1, the figures show moths described on pages 144, 145, 155, 159, 152, 155 and 150, in that order. To find a text reference from the plate means looking in the index.

Thirdly, there are errors in the plates. Figures 10 and 11 of plate 30 in Vol. 1—Oak Hook-tip female and Barred Hook-tip male—have been transposed. Figure 14 on plate 70 Vol. 2 appears to be the Grey Pine Carpet (*Thera obeliscata* Hübn.) not the Spruce Carpet (*T. variata* subsp. *britannica* Turner).

Fourthly, the *Eupithecia* are drawn about twice life size on the coloured plates. No mention is made of this either on the plates or in the text. A beginner might be greatly puzzled. The scale ought to be shown on each of the plates concerned.

Fifthly, there are printers errors that should have been eliminated by careful proof reading. Plate 84 Vol. 2 refers to the "Bilbury Pug" instead of the "Bilberry Pug". On page 271 Vol. 1 "venosa" is written "Venosa". And there are other such errors. Possibly in the same category of mistake is that on page 311 Vol. 1 in reference to the Giant Ear (*Hydraecia hucherardi* Mabille). South says "in 1953 a female was taken by Mr. W. F. Tweedie in Romney Marsh and Mr. H. Robinson took a male at Dungeness, where later that year five were taken". Mr. Tweedie's initials are "M. W. F." not "W. F.", and the five moths were taken not at Dungeness but in Romney Marsh.

Sixthly, by continuing to use the text of the earlier editions without proper amendment, mis-statements occur that should never have been allowed. Thus, page 68 Vol. 1 reads with reference to the Kentish Glory (*Endromis versicolora* Linn.) "In England it seems to be not uncommon in Wyre Forest, Worcestershire, and the Reading district in Berkshire". To the best of my knowledge, I hope I am wrong, *E. versicolora* has been extinct in the Reading area for some fifty years! There are other like errors.

My seventh criticism is perhaps a little unfair. One of the faults of the previous editions of South was so often showing illustrations of two almost identical examples of a species, instead of either showing two different forms of the species, or having one illustration of that species and using the space made thus available to illustrate some form of another species which was not illustrated. This fault has been

largely rectified, but not entirely. For example, plates 34 and 36 in Vol. 1 containing pictures of a male and female of each of Yellow-tail (*Euproctis similis* Fuessly), Brown-tail (*E. chrysorrhoea* Linn.), Reed Tussock (*Laelia caenosa* Hübn.), and Black V Moth (*Arctornis l-nigrum* Müll.). In every case the only apparent difference between the sexes is form of antennae, body shape and size of insect. One picture of each would suffice and this would leave a free plate. It would be helpful to a beginner to show the banded *conversaria* and the black *nigricata* forms of the Mottled Beauty (*Alcis repandata* Linn.), and other useful illustrations readily come to mind.

Eighthly, and this is really my main complaint, the distribution given of numerous species is inaccurate and misleading. Thus fourteen lines of text on pages 202-203 Vol. 1 are used to give the distribution of the Southern Wainscot (*Leucania straminea* Treit.), naming 17 counties including Sussex, Somerset, Devon, and Cornwall. But not Hampshire, where in places the insect is fairly common. Again, the Obscure Wainscot (*L. obsoleta* Hübn.), page 203 Vol. 1, is stated to be "a very local species, chiefly found among reeds in Norfolk, Hunts., Cambs., Sussex, and the Isle of Wight", and also that it occurred "in marshy places along the banks of the Thames from Bucks. to Essex and Kent". It occurs to my knowledge in west Surrey and south east Kent, both well away from the Thames, mid and south Hampshire, and the Isles of Scilly. I should expect to find that it has been recorded from Dorset and Devon. Again, the Devonshire Wainscot (*L. putrescens* Hübn.) is stated, page 205 Vol. 1, to be "confined to the coasts of South Devon and South Wales". It is well known that it occurs along the North Cornish coast into North Devon, and I would expect to find it in South Cornwall.

The Grey (*Hadena caesia* subsp. *mananii* Gregson) is said, page 181 Vol. 1, to occur in various localities in Co. Cork, Co. Kerry and Co. Donegal in Ireland. No mention of Co. Clare is made where it occurs in the Burren.

Webb's Wainscot (*Nonagria sparganii* Esp.) is stated on page 339, Vol. 1, to occur along the south coast from Kent to "Devon and Somerset". Reference is made to the Isle of Wight, Suffolk and Co. Cork. No mention is made of the Isles of Scilly, where it is resident. Again, the Silky Wainscot (*Chilodes maritima* Tausch.) is stated on page 344 Vol. 1 to occur in Norfolk and Cambs., Hunts., Essex, Herts., Suffolk, Surrey, Kent, Sussex, Dorset, Devon, and Isle of Wight. It fails to mention Hampshire (mainland) and Isles of Scilly where it also occurs.

The Butterbur (*Gortyna petasitis* Doubl.) is stated on Page 314 Vol. 1, so far as the south of England is concerned, to have been reported "from the Eastern counties and from Dorset, Somerset and Wiltshire". It certainly occurs in Surrey, Hampshire, Middlesex, and Hertfordshire, and doubtless in other southern counties where its foodplant grows.

Probably all these additional county records have been published in *The Entomologist's Record*, *The Entomologist* or the *Entomologist's Gazette* during the last 15 years. Certainly most have.

To make the above remarks, I have opened Vol. 1 of South at random some ten or twelve times, and have read the distribution given for

some half dozen or so species each time. There are doubtless additional misleading statements of distribution, but I do not wish to labour the point. My complaint is that the publishers should have had the text read and amended by an entomologist with a wide and up-to-date experience in the field, such as Dr. Charles de Worms, Mr. Austin Richardson or Mr. E. W. Classey, to name but three of a number who come readily to mind.

It is easy to criticise. In spite of all I have said above, the new South is by far the finest book in its class on the larger British Moths for both beginner and expert, and no lepidopterist should be without it. The additional species illustrated in the new edition are particularly valuable. But how much better South could have been if someone had displayed a little more imagination and care.

Yours faithfully,

ROBIN M. MERE.

Mill House, Chiddingfold, Surrey.

## The Larval Taxonomy of the British Trichoptera

BY ALLAN BRINDLE, F.R.E.S.

### 2.—THE PHRYGANEIDAE

In the present part of this series a key is given to the species of the Phryganeidae in both the larval and pupal stages. The larval key, which is based on Lestage (1921) but somewhat amended, has been used for the identification of some of the species; the pupal key, however, which is a more or less literal translation of that in Lestage, has not been tested. When more work has been done on the immature stages of the family, a more satisfactory key should result, but the length of time necessary to accomplish this is the chief reason for the present survey. The characters used in Lestage and earlier authors, in any case, have usually been found to be good, and it is only in some genera that difficulty is found.

There is also an error in the previous paper (Brindle, 1961), which should be corrected. On p. 162 the second part of couplet 5 occupies lines 9 and 10. Line 9 is correct but line 10 should read:—  
'3.4.4. . . . Rhyacophilidae'.

With the inclusion of *Agrypnetes crassicornis* McLachlan in the Phryganeidae, the pupae of this family may have spines 2.4.4., or 2.2.2., the latter formula restricted to *Agrypnetes*.

The Phrygaenidae possess sub-eruciform larvae, the head being yellow or brown with darker bands which may almost obliterate the lighter colour. The characteristic head pattern, which is similar to some *Limnephilus*, consists of two dark longitudinal bands on the genae approximately following the lines of the occipital and fronto-clypeal sutures, with a median dark band on the fronto-clypeus (fig. 2). In *Oligotricha* (fig. 8) this latter band is absent, and the two dark bands coincide with the fronto-clypeal sutures. In *Phryganea* and *Oligotricha* the bands are dark brown or blackish, contrasting with the yellowish

ground colour of the head, but in *Agrypnia* and *Agrypnetes* the bands are brownish. The head is longer and narrower in *Oligotricha* and shorter and more rounded in *Agrypnia* (fig. 7)

The mandibles are assymetrical and strongly toothed, the right mandible usually with one or two teeth less than the left; and, with the exception of *Trichostegia*, the inner concave edges of the mandibles are without the brushes of setae so commonly found in caddis larvae. The maxillary palps are long and five-jointed; the labial palps are short and two-jointed. The antennae are short, consisting of a basal segment with a distal setae; the labrum is usually large and elliptical with a median anterior notch.

Only the prothorax has a dorsal sclerotised plate, the dorsum of the meso- and meta-thorax being membranous. The anterior and median pairs of legs are about equal in length, the anterior being broader. The distal spines of the anterior legs are on processes. A prosternal horn occurs between the anterior coxae.

The abdomen is generally reddish, greenish or whitish, the first segment having very large protuberances, one dorsal and two lateral. The lateral line along this side of the abdomen is well developed as in most eruciform larvae. The tracheal gills are long, filiform and single, the posterior gills of the lateral rows being pubescent. The dorsal plate on the ninth tergite is generally hexagonal with four setae posteriorly.

The typical case of the family is a simple tube, open at both ends, not narrower posteriorly, or only slightly, and constructed from pieces of vegetable material, cut into uniform lengths and arranged in a spiral around the case. When fully grown the larvae of *Phryganea* probably show this type of case to perfection, but when young the spiral construction of the case is not always apparent. *Trichostegia* arranges the material longitudinally not spirally, and the case of *Agrypnia pagetana* is rarely spiral though that of *A. picta* is. *A. pagetana* may use a piece of hollow stem.

For identification purposes any caddis larva with only the pronotum sclerotised and in a tubular case belongs to this family—the spiral construction of most cases is an added certainty. The only doubts which may arise concern some *Athripsodes* (Leptoceridae) in which the mesonotum is only slightly sclerotised but their cases are never spirally made, the abdomen is much narrower and the gills are in tufts, not single. The only other British caddis larvae making spiral cases belong to the genus *Trienodes* (Leptoceridae) but here the cases are long, very narrow, and taper considerably posteriorly.

Pupation takes place in the case after this has been closed by perforated membranes. Tufts of vegetable material are drawn into the ends of the case before the construction of the membranes, the latter being internal to the vegetable tufts.

The pupae have the labrum fully as long as wide (fig. 9) with a group of setae at the anterior angles. The pupal mandibles are long and stout, the distal part being either strongly or gently curved, and the basal part being strongly or only slightly broadened. In all cases there is a prominence on the outer edge on which are placed two setae.

Fringes of setae are usually prominent on the median legs of the

pupa, the anterior and posterior legs being provided with less numerous setae. The notum of the first abdominal segment is generally produced posteriorly in a narrow elongated process, the distal margin of which may be rounded or emarginate (fig. 12). Tracheal gills occur as in the larva. The anal processes are short, often more or less blunt, sometimes (*Agrypnia*) being produced into a short pointed apex (fig. 10).

The larvae are characteristic of still or slowly moving water, and there is some restriction of habitat amongst the various species. In spite of the large size of *Phryganea* adults, the emergence from the pupa is undertaken at the water surface, the cast pupal exuviae being left floating on the water surface.

The sizes of the fully grown larvae and of the pupae are included in the keys.

#### KEY TO LARVAE.

1. Head with two blackish longitudinal bands but without a median band on the fronto-clypeus (fig. 8); length 20-22 mm. ... *Oligotricha*
- Head with two blackish or brownish longitudinal bands and with a similarly coloured band on the fronto-clypeus ..... 2
2. Fronto-clypeal band covering most of the sclerite (fig. 1) ..... 3
- Fronto-clypeal band narrow (figs. 2, 4, 5, 7) ..... 4
3. Head shorter and rounded (as fig. 7); mandibles without brush of setae on internal edges; left mandible bidentated at apex; length 20-25 mm. .... *Agrypnetes*
- Head more elongated (fig. 1); mandibles with a brush of setae on internal edges; left mandible not bidentated at apex; length 15-17 mm. .... *Trichostegia*
4. Pronotum with blackish anterior and posterior borders; bands on head dark brown or blackish; head longer (figs. 2, 4, 5); length 22-44 mm. .... *Phryganea*
- Pronotum with a dark area in middle extending to anterior border, but with posterior and lateral borders light; head shorter (fig. 7); length 20-24 mm. .... *Agrypnia*

#### *Oligotricha* Rambur

Two species, both in slowly moving or still water, often in peaty pools on moorlands.

1. Two almost parallel blackish longitudinal bands on head which extend on to thoracic nota and first abdominal segment; widely distributed ..... *ruficrus* (Scop.)
- Bands absent from thoracic tergites; very local, recorded from Staffordshire and Shropshire ..... *clathrata* (Kol.)

#### *Phryganea* L.

Four species, all widely distributed, in still or slowly moving water.

1. Gills absent from eighth abdominal segment; ventral surface of head with dark bands (fig. 3); typical of fen country but also occurs in some Lake District tarns; length 22-26 mm. .... *varia* F.
- Gills present on eighth abdominal segment; ventral surface of head without dark bands ..... 2
2. Fronto-clypeal band narrowed ventrally or not reaching anterior

- border of fronto-clypeus (fig. 4); three gills on each side of eighth abdominal segment; in lakes and slowly moving water, both in lowland and upland districts; length 30-40 mm. .... *striata* L.
- Fronto-clypeal band not narrowed ventrally (fig. 5); two gills on each side of eighth abdominal segment ..... 3
3. Two dark marks on ventral surface of head (fig. 6); gills absent from second abdominal segment; in stony lakes or peat pools, etc., always in upland districts; length 22-25 mm. .... *obsoleta* Hagen
- Ventral surface of head without dark marks; head dorsally as in *varia* (fig. 2); gills present on second abdominal segment; in lakes and slowly moving water in lowland districts; length 30-44 mm. .... *grandis* L.

#### *Trichostegia* Kolenati

- One species (fig. 1), rather local, in slowly moving water  
..... *minor* (Curt.)

#### *Agrypnetes* McLachlan

One species only known in Britain from Malham Tarn, Yorkshire, but it should occur in some other Northern lakes.

- ..... *crassicornis* McLach.

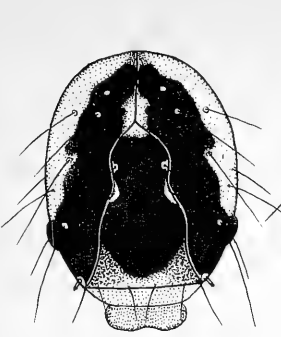
#### *Agrypnia* Curtis

Two species.

1. Fronto-clypeal band broadened suddenly ventrally to reach both lateral borders of fronto-clypeus; gills present on second abdominal segment; very local ..... *picta* Kol.
- Fronto-clypeal band parallel (fig. 7); gills absent from second abdominal segment; characteristic of fen country, in lakes and ponds, common ..... *pagetana* Curt.

#### KEY TO PUPAE.

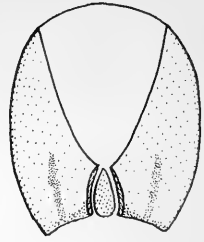
1. Spines 2.2.2.; fourth abdominal segment without a dorsal sclerotised plate; length 16-20 mm. .... *Agrypnetes*
- Spines 2.4.4.; fourth abdominal segment usually with a dorsal sclerotised plate (ex. *P. varia*) ..... 2
2. Mandibles rudimentary, the terminal part aborted; length 16-20 mm. .... *Oligotricha clathrata*
- Mandibles well developed ..... 3
3. Anal appendages with a digitate process apically directed towards mid-line; case not spiral; length 10-13 mm. .... *Trichostegia*
- Anal appendages without such a process; length 14 mm. or more ..... 4
4. Mandibles with terminal part sharply bent, almost at right angles proximal part broad ..... 5
- Mandibles with terminal part gently curved (fig. 9), proximal part narrower ..... 6
5. Dorsal gills absent from eighth abdominal segment; labrum projecting, with transverse row of small tubercles; length 26-33 mm. .... *Phryganea grandis*
- Dorsal gills present on eighth abdominal segment; labrum not projecting, smooth; length 25-30 mm. .... *Phryganea striata*
6. Dorsal process on first abdominal segment rounded distally; length 16-20 mm. .... *Oligotricha ruficrus*



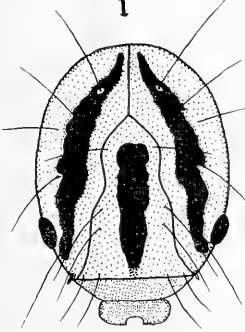
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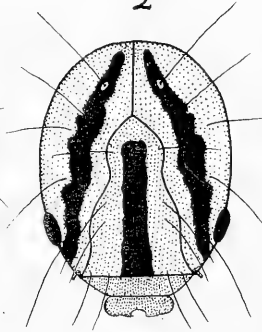
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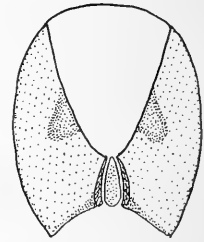
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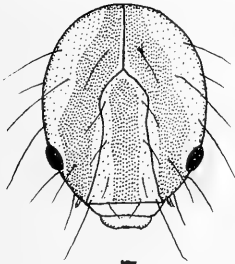
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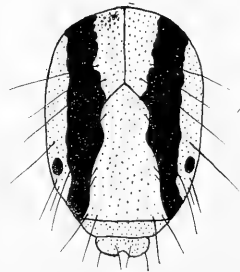
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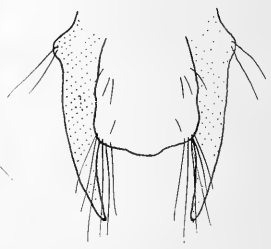
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7



8



9



10



11



12





- Dorsal process on first abdominal segment emarginate (fig. 12) ... 7
- 7. Apex of anal appendages with pointed processes (fig. 10) ..... 8
- Apex of anal appendages pointed but without processes (fig. 11) ... 9
- 8. Labrum wider than long; case spiral; length 16-17 mm. male, 20-22 mm. female ..... *Agrypnia picta*
- Labrum as wide as long; case not spiral; length similar ..... *Agrypnia pagetana*
- 9. Fourth abdominal segment without a sclerotised plate; first abdominal segment without gills; dorsal gills on segments 2-5; length 16-20 mm. .... *Phryganea varia*
- Fourth abdominal segment with a sclerotised plate; first abdominal segment with gills; dorsal gills on segments 2-8; length 14-15 mm. .... *Phryganea obsoleta*

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- Hickin, N. E. Larvae of the British Trichoptera—49. *Proc. R. ent. Soc. Lond.* (A), **30**: 174-176.
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## LEGEND FOR PLATE VIII.

- Larvae (heads).—Dorsal: 1, *T. minor* (after Hickin); 2, *P. varia*; 4, *P. striata*; 5, *P. obsoleta*; 7, *A. pagetana*; 8, *O. ruficrus*. Ventral: 3, *P. varia*; 6, *P. obsoleta*.
- Pupae.—9, *A. pagetana*, labrum and mandibles. 10, *A. pagetana*, anal process. 11, *P. varia*, anal process. 12, *P. striata*, process on first abdominal segment. (Figs. 9-12 after Lestage.)

## More Crane-flies in the Lake District

By R. M. PAYNE

Last year (*Ent. Rec.*, **72**: 270-1) I wrote an account of my collecting crane flies (Diptera, Tipulidae) in a small area on the western edge of the Lake District, in Cumberland. In 1961 I spent a fortnight in the same area, but earlier than in 1960, at the beginning of August.

This year I paid special attention to the exposed *Sphagnum* and cotton grass bog on Birkby Fell (350 feet above sea level) where in 1960 *Limnophila fulvonervosa* Schummel and *L. meigeni* Verrall had been noted. These two species were again common, the former especially so, and in addition I found *L. squalens* Zett., *Tipula oleracea* L., *T. cava* Riedel and the very large and striking fly *Pedicia rivos*a L. The few specimens of *T. cava* and *P. rivos*a I saw were amongst the taller vegetation in the bog—mainly *Juncus acutiflorus* Ehrh. or tufts of *Molinia coerulea* L. The long black legs of the *Pedicia*, robust for a fly of this family and quite unlike the legs of any *Tipula*, give it something of the appearance of a huge spider in the net. It may be of interest to note that these Cumberland *P. rivos*a had wing markings of the "southern" type, not of the "northern" type, as depicted by F. W. Edwards in his monograph on the "British Short-Palped Craneflies" (*Trans. Soc. Brit. Ent.*, 1938, **5**: 53).

The margins of the damp oak wood lower down the course of the stream again proved very productive, especially on warm still evenings

when the sun was setting. Species taken here included *Tipula fulvipennis* Degeer, *T. scripta* Meigen, *Limonia nubeculosa* Meigen, *Dicranomyia dumetorum* Meigen, *D. chorea* Meigen, *Rhipidia maculata* Meigen, *Austrolimnophila ochracea* Meigen, *L. fulvonervosa*, forms of the very variable *Pilaria nemoralis* Meigen, *Cheilotrichia cinerascens* Meigen, and *Erioptera lutea* Meigen. It was presumably a little too early for *Tipula marmorata* Meigen to be about: I did not see this ubiquitous fly in Essex until the beginning of September.

On the maritime sand dunes at Drigg there were two tiny ponds dominated by the common spike rush (*Eleocharis palustris* L.). Crane-flies netted round the margins of these ponds included *T. oleracea*, *T. lateralis* Meigen, *Pilaria discicollis* Meigen and *Erioptera trivialis* Meigen.

In 1960 I took *Dicranota guerini* Zett. at 1,900 feet, and assumed that this might be a fly peculiar to high altitudes. This year, however, it was flying over a shady backwater of the River Esk only some 50 feet above sea level.

In general I found the higher altitudes unrewarding, but at 1,280 feet on Hardknott Pass I took a male *Tricyphona schummeli* Edwards resting on the moss *Campylopus atrovirens* De Not. on a dripping vertical rock face.

## Notes and Observations

AN ENTOMOLOGICAL MYSTERY.—With reference to Dr. Birkett's note *antea* 134) I can make a suggestion as to the origin of the *Melitaea aurelia* Nickerl. The late A. Smith of York was a very great friend of Head, the Scarborough dealer. Some fifteen years ago Smith called on me at Westcliff, spending most of the day with me, and almost immediately he told me of his friendship with the late Head and of the numerous insects with which Head had supplied him, mostly, I gathered, in exchange. As many members of my generation will remember, Head was, to put it delicately, somewhat careless of the origin of some of his insects. I ventured to suggest this to Smith and he would not entertain the idea for one moment, so it is quite likely that he accepted anything offered without criticism. Head used to offer British larvae of *Isturgia limbaria* Fabr. in his sales list until about 1934. When my late friend W. S. Gilles wrote and asked him as to their origin, he replied that he had been carrying on a strain in captivity for many years, but by a curious coincidence *limbaria* never appeared in subsequent lists.—H. C. HUGGINS, 65 Westwood Boulevard, Westcliff-on-Sea, Essex. 26.ix.1961.

ABUNDANCE OF *LEUCANIA VITELLINA* HÜBN. IN SOUTH DEVON.—1961 would seem to be a year of great plenty for this migrant Wainscot which has evidently bred in quantity from spring parents. While at East Prawle for three days during mid-September Mr. E. Hare and myself must have seen quite thirty of these insects at light and sugar and Mr. Hare had already seen as many as this during four nights earlier in the week. It seemed more numerous than *L. l-album* L. and more prevalent in the South than for any year since the last War. I understand several specimens have been taken well inland.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 4.x.61.

**UTETHEISA PULCHELLA L. IN SOUTH DEVON.**—On the morning of 17th September, while in company with Mr. E. J. Hare at East Prawle, I was thrilled to see sitting in full view on the top of my m.v. trap, set in the small yard outside a local farmhouse, a rolled-up moth which I at once recognised as the Crimson Speckled Footman. Very fortunately it was overcast at the time, otherwise this prize would not have been *in situ*, for I was able to box it quite easily and it turned out a perfect male specimen. It would seem, judging by reports to date, that this autumn may well prove to be a record one this century for this sporadic migrant of which more examples have already been reported this year than the total for the past 35 years. And these have been at intervals all along the south coast and as far north as the south of Scotland, evidence of a large scale immigration.

I gather that several other rare migrant moths were taken in other areas of the south coast on the same night.—C. G. M. DE WORMS, Three Oaks, Woking. 4.x.1961.

**COLIAS CROCEUS FOURC. AND ARGYNNIS SELENE SCHIFF IN SOUTH DEVON IN SEPTEMBER.**—With so few migrant butterflies about this summer it was very gratifying to observe several Clouded Yellows near the cliffs at East Prawle on 17th September, and I was especially glad to observe the Small Pearl-bordered flying in a small marshy hollow, evidently a partial second brood of this butterfly as it was much smaller than the normal form and I have never seen it on the wing at this time of year before.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 4.x.1961.

**DEILEPHILA ELPENOR L. IN SEPTEMBER.**—On 13th September I was surprised to find an Elephant Hawk in my trap here, most probably a second brood specimen as the last one I had recorded from here this year was on 12th July.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 4.x.61.

**PYRAMEIS CARDUI L. AT WOKING.**—In view of the scarcity of migrant butterflies this year I was pleased to see a Painted Lady on the michaelmas daisies here on the sunny morning of 29th September. It was in company with *P. atalanta* L. and *Polygonis c-album* L.—C. G. M. DE WORMS, Three Oaks, Woking, Surrey. 4.x.1961.

**UTETHEISA PULCHELLA L. IN SUSSEX.**—On 19th September at about 4.15 p.m. on Camber sands, I caught a good female specimen of the crimson speckled footman (*Utetheisa pulchella* L.). I have had the identification confirmed. I saw a second one in the same area but failed to catch it.—MARTIN SHARP, Temple Grove, Herons Ghyll, near Uckfield, Sussex. 29.ix.1961.

**RHODEMETRA SACRARIA L. AND DIASEMIA RAMBURIALIS DUP. IN HERTFORDSHIRE.**—A rather worn male specimen of *Diasemia ramburialis* Dup. was found in the mercury vapour trap on the morning of 22nd September, and another specimen of *Rhodometra sacraria* L., this time a fertile female in good condition, was in the trap the following morning.—T. G. HOWARTH, Arrochar, Barnet Gate, Arkley, Herts. 26.ix.1961.

A NOTE ON THE ECOLOGY OF *POLYGONIA c-ALBUM* L.—Mr. H. Symes, in substantiating my remarks on the overplanting of pine in the New Forest and its disastrous effects on the flora and fauna, gives his opinion that the planting of conifers can not have any effect on the incidence of *Polygonia c-album* (L.). He states that there is still plenty of food for the larvae but overlooks the fact that the only food for the imago when it emerges from hibernation is the blossom of willows. In my note I emphasized how great numbers of the butterfly visited willow blossom in March and they do so not only to replenish their exhausted reserves of the winter months but to provide the very necessary pabulum to build up the ova. It is during the early weeks after hibernation that mating takes place, and it is imperative that the female should be provided with ample food after pregnancy has occurred; without the willow blossom, which is the only food available, I have no doubt most females would be sterile even if copulation had been effected. The over-planting of conifers has led to the disappearance of willow in the ridings of the Forest, and with it the large numbers of insects which depend on this tree for their livelihood.—F. C. FRASER, I.M.S. (Retd.), M.D., F.R.E.S., F.R.Z.S.N.S.W., 55 Glenferness Avenue, Bournemouth. 2.x.1961.

ADOPOEA LINEOLA IN SURREY.—On 29th July and subsequently on several dates this year I have found *A. lineola*. *A. sylvestris* appeared to be about one in six on 30th July when I netted about 40 specimens for identification purposes. Bearing in mind that *A. sylvestris* appeared to have emerged some while earlier, the relative numbers might well be closer than the count indicated. I understand the species has been taken in Surrey before but this is the first time I have recognized it within the border.—A. S. WHEELER. 12.x.1961.

MACROGLOSSA STELLATARUM L. IN BOURNEMOUTH.—On 13th October I saw my first *M. stellatarum* of the year. It came to lavender in my garden at 4.40 p.m. and appeared again on the following day at 3.30 p.m.—H. SYMES, 52 Lowther Road, Bournemouth. 16.x.61.

SOME RARE MICROLEPIDOPTERA IN KENT: I would like to record two interesting species that have come into my hands this year, *Depressaria astantiae* Hein. came to my light on the nights of 2nd, 3rd and 4th August, 2♂♂ 1♀ in fresh condition at Westwell, and *Meessia argentimaculella* Staint., one on a beech trunk at Borough Green, Sevenoaks, on 26th July and one at light at Westwell, 1st August 1961. Both species were identified by Mr. S. Wakely.—E. SCOTT, Suomi, Westwell, Ashford, Kent. 28.viii.1961.

HORNETS AND MERCURY VAPOUR.—At this time of year, I frequently find hornets (*Vespa crabro* L.) in my mercury vapour trap, but this morning I found one busily eating a *Pheosia gnoma* Fabr., Step, in his "Bees, Wasps, Ants and allied Insects of the British Isles" says: "entomologists who have been sugaring for moths at night have noted the activity of the hornet at this period, and its interest in the sweet patch and the insects visiting it," but I do not recall any references to a similar interest in the mercury vapour trap.—L. W. SIGGS, Sungate, Football Green, Minstead, Lyndhurst, Hants. 27.viii.1961.

**A BATTERY-RUN MERCURY VAPOUR LIGHT.**—Last year I bought a rotary converter, which turns 12 volts into 240 volts, as a means of providing portable mercury vapour light. My original theory was that one should surely be able to make a car fulfil the duties of a generator, and the converter seemed an ideal way of making it do this. It would simply be connected to the battery, which would be kept charged by keeping the engine ticking over as long as required. The first full scale performance, about three hours in duration, resulted in a dead battery and a very hot car, and I decided not to repeat what I still sneakily thought was a good idea.

Subsequently, two ex-W.D. 12-volt accumulators were purchased. These are each 72 ampere/hour capacity, and provide good light with the 125 watt bulb, for about four hours when wired in parallel. I had hoped for about twice that length of time with fully charged batteries, but I presume the apparatus takes more current than was bargained for. The converter cost £10, and the batteries £7 10s. per pair, which I think compares favourably with the cost of a generator. However, it seemed worth while to get a charger, at £6, in order to be completely independent. The idea of really cheap portable mercury vapour light has thus not worked out very well, though I think the cost is still at least competitive.

The converter, by the way, makes practically no noise, just a melodious hum. Could anyone tell me if by using an 80 watt bulb would prolong the light time substantially, and is it a waste of current to use a long flex between the choke and bulb? These questions probably reveal why I was always bottom in physics, but any helpful comment on the subject generally would be most welcome.—Dr. F. H. N. SMITH, Perranporth, Cornwall. 27.viii.1961.

**TWO VARIETIES OF POLYOMMATUS ICARUS ROTT. FROM SUSSEX.**—I wish to record the capture of two remarkable specimens of *Polyommatus icarus* Rott. taken in Sussex this year on different grounds, miles apart, on different days in August. Both are male undersides, as follows: the first is ab. *costa-juncta*, with areas of upperside blue immediately below each *costa-juncta* mark shading towards the margins with dull purplish colour. An extreme form of homoeosis. The second has the left wings quite normal, but the right forewing, which is truncated and enlarged, has nearly half a hindwing superimposed, including the lunules and fringes, and the right hindwing is represented by a tiny narrow strip of wing with one or two spots and one orange lunule, with complete fringe. The right forewing appears to be of double thickness and the insect has five wings. In addition to being an extreme form of homoeosis, there are some other spots occupying unusual positions in this forewing, making the specimen an example of heteromorphosis also. It was taken hopping about in long grass, just emerged, and of course, unable to fly.—A. E. STAFFORD, 83 Colborne Way, Worcester Park, Surrey. 18.ix.1961.

**LASIOCAMPA QUERCUS L. AND PLUSIA ORICHALCEA FAB. IN CORNWALL.**—I wonder if anyone has decided if our South Cornish *L. quercus* L. is in fact var. *callunae*? I took two females of the Northern Eggar at Sand-scale on the North Lancashire coast last July, and I can detect no difference between these and the series of Cornish Oak Eggars now

before me. The outward turn of the band on the wings, the light patch at the base of the male wings, the size and, in most cases, the dark colour, all correspond to South's description of *callunae* (except that the Cornish specimens themselves are considerably bigger than those shown in the new edition, and are more accurately represented—as in several other cases—in the first (1907) edition). South states that *callunae* is found on Dartmoor and in North Devon. The series I refer to were all taken on the cliffs within a mile of this cottage or in the garden trap, usually in July.

Some years ago I reported to the "Record" that I had taken a *Plusia chryson* Esp. here on 15th September 1956. Why I did so I cannot now imagine, since Mr. Tams identified it at the time as *P. orichalcea* F. This aberration on my part lasted until I noticed a good picture of the Slender Burnished Brass in the new South. I then turned to Mr. Tam's label and found I had lost a *chryson* but had gained an *orichalcea*.

My fellow collector, Mr. R. Puckey, also took a good specimen of this moth at Polperro on 22nd August 1960.—Col. H. G. RosSEL, Bodinnick-by-Fowey, Cornwall. 12.x.1961.

**THE SHRINKING FAUNA.**—I read with interest, and a little sadness, the article entitled "Impressions of the New Forest in 1961 and Before" by Mr. H. Symes, in the September issue.

Mr. Symes' main theme was the apparent gradual decrease in lepidoptera in the Forest, with especial reference to *paphia*, *iris*, *camilla*, *P. c-album* and *polychloros*. I suppose these butterflies were at one time found regularly, and sometimes in profusion—or, at least, so we are led to believe by the writings of earlier days.

I must admit that I was just a bit disappointed by the lack of *paphia* and *camilla*, when I visited the New Forest in the summer of 1956. I must assume that several factors have contributed to the decline of the lepidoptera here, not the least of which I suspect to be over-collecting. I repeat, over-collecting, especially in years when a species is depleted through disease, or through the period to which all creatures are subjected, those years or year, of paucity, not yet fully understood by the scientists. My own opinion is that this factor is probably the most telling on any particular species. And when you consider all the other developments in recent years, it is hardly surprising that many species are on the decline, and some even on the verge of extinction, in a particular area.

Causes of the depletion of lepidoptera can be summarised as follows:—(a) Over-collection, especially in "lean" years; (b) increased use of insecticides, etc.; (c) the ravages of parasitic-flies; (d) more regular clearing of foodplant by Forestry Commission and farmers, and (e) heavier planting of conifers, and not of deciduous trees.

When you also add to these factors, the possibility of unfavourable climatic conditions in some years, the gradual encroachment of industry and housing and the increased (?) population of deer in the Forest, is it surprising that butterflies are becoming scarce?

The article which followed, about collecting in North Devon/Cornwall by Commander G. W. Harper, R.N. (Retd.), adds weight to my argument for over-collection. He himself admits that he saw eight other "nets" in the field—all of whom were probably on the search for

another rare species—*Maculinea arion*. Here is a butterfly well on the road to extinction, helped on its way by regular collecting. I challenge anyone to prove that *Maculinea arion* is common anywhere. Even the natural enemies are supposed to be taking their toll of this blue, so human interference can only hasten the end.

As with the recent pronouncement that the larger mammals in Africa are doomed to extinction, so I think are some of the lepidoptera in Britain, unless we can protect them.—P. C. QUIN, 51 Leylands Lane, Heaton, Bradford, 9. 2.x.1961.

[The thought of over-collecting can raise strong feelings in the entomologist as in others, but I well remember administering a strong rebuke to a well-known entomologist who exhibited a row of about six *Catocala fraxini*, only to be informed that these had been raised *ab ovo* and that many more of the brood had been returned to the home of their parents; probably many more than would have survived in the wild state.—ED.]

THE CANARY ISLANDS AND CENTRAL SPAIN.—There seems to be something very wrong with Baron de Worms' reference to the foodplant of *Danaus plexippus*. Apart from the fact that *Asclepias curassavica* is spelt *Asclepius curassavica*, it and Lantana are completely different plants, Lantana belonging to the Verbenaceae and the *Asclepias* to the Asclepiadaceae. In fact the only thing they have in common is the colour of the flowers. The Asclepiad is, of course, the foodplant.—D. G. SEVASTOPULO, F.R.E.S., Mombasa. 18.x.61.

## Current Notes

### WYE AND CRUNDALE DOWNS NATIONAL NATURE RESERVE.

This Reserve forms part of the escarpment of the North Downs between Ashford and Canterbury. It is the first area of chalk downland to be declared as a National Nature Reserve in Kent and adds to the incomplete series stretching from Wiltshire and Hampshire to Bedfordshire and Sussex.

To-day the chalk downlands are particularly vulnerable to destruction because of increased mechanisation of farming and it is urgent that the Nature Conservancy should acquire further chalk areas to preserve them for study. Each Reserve in this planned series has its own particular flora and fauna owing to differences in their history, management, climate and distance from the Continent of Europe which has provided the main source of our flora and fauna during the last ten thousand years and more.

The present acquisition consists of 123 acres of chalk downland, scrub and mature woodland. The downland is basically a product of sheep-grazing which was practised as early as the Roman occupation and became such an important feature in the English economy during the fourteenth and fifteenth centuries. The scrub and woodland are the result, at least in part, of the natural colonisation of the downland by woody species (such as Hawthorn and Beech) and clearly demonstrate the necessity of grazing in order to maintain the downland character.

The Reserve has a rich flora including the Lady Orchid, Man Orchid and Fly Orchid. One of the many notable insects is the Feathered Ear Moth, one of whose main centres is the Wye district.

The Devil's Kneading Trough, a natural steep-sided valley, cuts into the downs on the Reserve, forming one of its most conspicuous features. On the crest of the downs are several tumuli which indicate the antiquity of human influence in this type of country.

Access to the Reserve along the public footpath is unchanged; elsewhere it is by permit only. Applications to visit and for permission to collect specimens of animals and plants should be made to the Regional Officer for the South-East, The Nature Conservancy, 19 Belgrave Square, London, S.W.1.

## Current Literature

*A Natural History of Porthleven in the County of Cornwall*, by H. B. Sargent, F.R.E.S., Kenion Press Ltd. This list is the result of ten years of active study of certain aspects of the natural history of the district, but it is limited to the author's personal observations and first hand, duly authenticated reports, the source of which is duly acknowledged. The author starts with an interesting account of the main local lists of the Cornish flora and fauna, and follows with a preface in which he describes the town and its surroundings, mentioning also the biotopical changes that are in progress, and also acknowledges the assistance he has received in the matter of identifications.

The lists of species, with short comments, follow; these are divided under the headings of Amphibians, Birds, Butterflies, Diptera, Flora, Hymenoptera, Isopoda, Land and Freshwater Snails, Mammals, Orthoptera, Reptiles, and Thysanura. In a preamble to the butterfly section, the author says that he has not attempted to deal with the moths because he disapproves of mercury vapour lamp trapping. I am inclined to agree with him in this unless the operator has the time and inclination to safeguard the lives of his captives after examination, but a very interesting part of the lepidoptera of the district is left untouched in consequence.

An improvement could be made in the editing of the lists, for one commences with two vertebrate orders, then two of insects, flowers, then two more insect orders, then snails, then mammals, more insects, reptiles, and finally more insects. Possibly this matter may be rectified in a future edition which, it is to be hoped, will attempt to deal with moths, beetles, dragonflies, and other so far untouched aspects of the fauna.

The book is well printed on art paper and bound in cloth boards, it contains views of the district and also a sketch map as a key to the remarks on the species mentioned.—S. N. A. J.



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## EXCHANGES AND WANTS

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*For Sale.*—Entomological Cabinets, one 20 Drawers, one 17 Drawers, and one 16 Drawers. Easy payments if required.—*R. W. Watson, "Porcorum," Sandy Down, Boldre, near Lymington, Hants.*

*Orthoptera.*—Crickets of the subfamily Gryllinae (except domestic Species) and grasshoppers of the subfamily Pyrgomorphinae from all parts of the World required in any quantity for research work in morphology, taxonomy, cytology, and experimental biology; dry or fluid preserved or living. Please contact *D. K. Kevan and R. S. Bigelow, Department of Entomology, McGill University, Macdonald College, Quebec, Canada.*

*Wanted.*—Seitz, A. Macrolepidoptera of the World, Vol. I. Barrett, C. G. British Lepidoptera, Vols. X and XI of large paper edition with coloured plates. All other recent literature on European Butterflies. *Dr. Neville Birkett, 3 Thorny Hills, Kendal, Westmorland.*

*Wanted.*—Living pupae or ova of *Pieris brassicae wollastoni* and *P. b. cheiranthi*, for experimental breeding. I should be very grateful to anyone holidaying in Madeira or the Canary Islands who can obtain even a few specimens. Will be glad to refund expenses of airmail and to supply specimens of any interesting crosses obtained.—*Brian O. C. Gardiner, 43 Woodlark Road, Cambridge.*

*Wanted.*—Cabinet of Mahogany by Brady of 40 Drawers or two of 20 Drawers.—*J. M. Chalmers-Hunt, St Teresa, Hardcourts Close, West Wickham, Kent.*

*For Sale.*—*G. quercifolia* (Lappet) Larvae, *A. villica* (Cream Spot Tiger) Larvae, 2/6 per dozen.—*T. H. Fox, 28 Boxwell Road, Berkhamstead, Herts.*

*S. Cameroons.*—Collector is open to receive commissions to collect, preferably Lepidoptera, Orthoptera, and Coleoptera, but would be prepared to consider other orders of Insects.—Please contact: *M. L. Benson, P.O. Box 39, Victoria, S. Cameroons.*

---

IRISH LEPIDOPTERA RECORDS.—No comprehensive catalogue of Irish macrolepidoptera has been published since Lt. Col. C. Donovan's List in 1936. I am now engaged in the preparation of a revised List, and in order that it may be as up to date as possible, I should be most grateful for any records from lepidopterists who have collected in Ireland since the date of Col. Donovan's publication. Full acknowledgment will be made.

E. S. A. BAYNES

2 Arkendale Road, Glengeary, Co. Dublin, Eire

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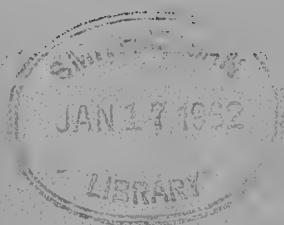
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# The Dingle Peninsula in July 1961

By H. C. HUGGINS, F.R.E.S.

I have already (*Ent. Rec.*, 73: 203-6) dealt with that part of our expedition in July 1961 in which Mr. E. S. A. Baynes and I sought after the west of Ireland forms of *Euphyia bilineata* L. I think, however, that an account of the other insects we met with may prove interesting, and also inform future collectors what they may find, and also not find, as conditions in Kerry have altered somewhat since the days of Kane and Donovan.

Mr. Baynes most kindly drove my wife and myself from Glenageary to the town of Dingle, which we made our headquarters on 2nd July: we left at 9.15 and arrived in the late afternoon; that day we only made arrangements to plug in the mercury vapour trap and had a talk about boats to the Blaskets.

On 3rd July we took the road along the cliffs to Slea Head and Coomenoole, stopping when we found what looked like possible collecting ground. It is here that I wish to issue a warning. Readers of Donovan (p. 49) will notice that he describes *Silene maritima* as "abundant" at Coomenoole, and my impression of nearly forty years ago agrees with this. Eight years ago Mr. L. Savage told me he had experienced some difficulty in finding any of the plant there, but it came as a shock to us that we could only find one good sized clump. The reason appears to be that many more cattle are reared in the neighbourhood than formerly, and as there is little fresh water above the cliffs they are conducted to the beach daily at low tide to drink from the streams at their base. Nearly all the *Silene* grows low down on the cliffs, and the cattle, which much relish it, crop it all off. The only clump we found was about six feet from the ground; we collected all the seed heads from it and halved the bag; we each obtained a good many larvae of *Hadena lepida* Esp. ssp. *capsophila* Dup., and I was lucky enough to get one *H. caesia* Borkh., which duly pupated.

The only place in which we found much *Silene* was at Inishvickilaun in the Blaskets, and it may be of interest to note that I found this same scarcity of it on the shores of Bantry Bay. When I first visited Glengarriff over forty years ago the plant was common in most rocky coves on the Castletown road, and one evening I netted two *H. barrettii* Doubl. over a big bank of it at Seal Cove. When I revisited this and other places in 1948 and 1949 only a few close-cropped plants were visible, and to find any quantity of it I had to wade at low water to a rock near Adrigole, inaccessible to cattle, which was covered with it. Here I found *capsophila*, *caesia*, and *H. cucubali* Fuess.

On 4th July we took the road to the Connor Pass. A little way out of the town Mr. Baynes suggested we should search the foxgloves for larvae of *Eupithecia pulchellata* Steph. and we obtained ten each. To my great surprise I got six pupae from mine: in the Glengarriff area I should have had at the most two, these Dingle larvae being much less stung than usual. We are eagerly awaiting their emergence, as all our captures so far in West Cork and Kerry have been of the fine ssp. *hebudium* Sheld.

On all our drives we saw choughs, but on this morning we saw a really rare bird for the west of Ireland, a turtle dove, which rose from

the road just in front of us. A week later Mr. Wolf, of the London Natural History Society, who was staying at our hotel on an ornithological expedition, came in in a state of wild excitement to say he had seen a turtledove. My wife and I told him (Mr Baynes had then returned home) that we had all three seen one on 5th July, which pleased him very much as he feared his one-man record might not be admitted.

We left the car parked at the top of the pass and Mr. Baynes and I walked, about 100 yards apart, for about a mile over the hillside and bog and back again. We did not see a single moth. I mention this for the benefit of those who may imagine the west of Ireland to be a seething mass of entomological rarities.

We then drove to the sandhills at Brandon bay. Here there was a great quantity of thyme, but very little on it. We raked the edge of the sandhills vigorously. Mr. Baynes took one example of *Heliofobus albicolon* Hübn., I nothing. However, there was a great number of *Crambus perlellus* Scop. on the sandhills, the unstreaked forms varied from the usual pearl white to a deep yellow-bronze, and all were a good deal smaller than English ones. Oddly enough the specimens we secured of the *warringtonellus* form were all marked in this yellow bronze, I had hoped to see some of the aberrations of which I possess one taken by Russ at Sligo, dark bronze on a lighter bronze ground.

We found this same colouration in the *perlellus* we saw on the sandhills at Inch, where the "Playboy of the Western World" was being filmed. At Inch also *Epirrhoe galiata* Hübn. was common, the same rather dark form usually found in western Ireland.

Although the weather was glorious and we covered the whole peninsula in the car, during the week we were all three together, I do not think we saw much else of interest. On the night of 6th July, however, Mr. Baynes and I took his pressure lamp to the top of the cliffs near Slea Head. We placed it in a slight hollow, and nothing whatever came to it except a couple of *Hepialus humuli* L. and a lovely purple *Pempelia dilutella* Hübn. Just as we were leaving, Mr. Baynes stood it on a low wall, only four feet higher than where it had been the last two hours, and in five minutes we saw another *dilutella* and half a dozen *Agrotis trux* Hübn. ssp. *lunigera* Steph. Possibly had we waited longer we might have seen more, but we were booked to go to the Blaskets the next day and, as the sea had at last become comparatively calm, we dared not miss the opportunity by staying up all night.

After Mr. Baynes went home, my wife and I put in most of our time searching, not very successfully, for *Cryphia muralis* Forst., but we did notice the rather reddish west of Ireland form of *Argynnis aglaia* L. (*Mesoacidalia charlotta*) on the road to the Connor Pass.

I will here summarise a few of the things that came to the mercury vapour trap. There was nothing not recorded in Donovan so I shall only mention those that seem of interest.

*Spilosoma lubricipeda* L. Common, all typical.

*S. lutea* Hufn. Common, all typical.

*Arctia caja* L. Common, all typical.

*Cryphia muralis* Forst. (new to Kerry). One, a very unusual form I have previously seen as a rare insect in Cork. My wife and I in eleven days got twelve more by hard searching. I am dealing with this insect elsewhere.



*Agrotis trux* Hübn. ssp. *lunigera* Steph. A few, all of the usual Irish form.

*Amathes baja* Fabr. One or two, very large and rather brilliant reddish.

*Hadena lepida* Esp. ssp. *capsophila* Dup. Two, both of the black ab. *suffusa* Tutt. This moth is undoubtedly established on *Silene* and *Dianthus* in gardens in the town; Mr. Baynes tells me it is also an inhabitant of the environs of Dublin. Curiously enough, *caesia* seems to make no attempt to colonize. I have myself never seen it more than fifty yards from the sea.

*Plusia bractea* Fabr. Two on the last night the trap was used, one very large and perfect. I love this moth, although it is not rare in Ireland.

*P. chrysitis* L.

*P. pulchrina* Haw.

*Abrostola triplasia* L.

All common and normal.

} *Euphyia unangulata* Haw. Several.

*Lygris prunata* L. Three. It is fifty years since I saw this fine insect in the east of England. The Dingle specimens are appreciably larger and lighter in ground colour than my English ones, also wild caught.

*Pempelia dilutella* Hübn. One, of the same form as the two on Sleat Head.

Finally, I should like to mention that one day when we were working the cliffs for *bilineata*, Mr. Baynes called out that he could see a curious woolly larva feeding on dock in a nasty place up the cliff. I joined him and confirmed that it was a full grown *Apatele euphorbiae* Fabr. and, after five minutes careful climbing, in which he was possessed of the two emotions, not causing the larva to fall, and not breaking his leg, he succeeded in securing it. It spun up two days later and emerged successfully on 20th August (this moth is double brooded in western Ireland). The specimen is a dark slaty grey with a distinct bluish tinge, rather the colour of a dark *caesia*, not of the paler clear grey of the Burren specimens.

## SHAPWICK HEATH NATIONAL NATURE RESERVE

This Reserve contains some of the last remnants of the extensive raised bogs, about 15 feet above sea-level, which once stretched from Glastonbury to within a few miles of the coast. These raised bogs were similar to those now covering a large part of the Central Irish Plain and were gently domed in shape and dominated by communities of Sphagnum Moss, Heather and Cotton Grass. The Reserve is set up under Nature Reserve Agreements with the Eclipse Peat Company and the Eclipse Land Company and covers 484 acres.

Extensive peat-cutting has turned the area into a complex patchwork of marsh and scrub woodland. Practically all of it has been cut at some time to some extent, but uncut patches remain and two of these are included in the Reserve. The peat is used mainly for horticultural purposes and under the Nature Reserve Agreement the Eclipse Peat Company will continue to extract it.

There is a wide range of flora and fauna because of the diverse habitats produced by peat-cutting and because of variations of acidity.

For example, Heather and Bog Asphodel are characteristic of one part of the area and a species of sedge, *Cladium mariscus*, of another. The rare Royal Fern is also present.

The peat deposits here have given unequalled opportunity to trace the history of changing vegetation, climate and prehistory from B.C. 4000 to A.D. 1000. Very few such opportunities now exist in southern England and it is of the utmost importance that remaining pieces of the original peat should be preserved intact from top to base with their enclosed prehistoric tracks for scientific research.

Access to the Reserve is by permit only. Applications to visit and for permission to collect specimens of animals and plants should be made to the Regional Officer for the South-West, The Nature Conservancy, Furzebrook Research Station, Wareham, Dorset.

## Lepidoptera seen in Cornwall during September 1961

By G. HAGGETT and A. J. WIGHTMAN

For the week 16th to 23rd September we stayed at St. Ives and worked each night locally, but during the daytime we covered a good many miles of the coastline. The only interesting migrants seen during daylight were *Colias croceus* Fourc. males, one on the beach at Marazion and two at Land's End, and a solitary *Vanessa cardui* L. at Trebarwith.

At night we worked mercury vapour light, both as a trap and from a mobile generator, also sugar and ivy blossom. The nights were cool with a waxing moon, yet occasional pelting showers, and for part of our stay there were blustery cold winds. Collecting sources varied much in their respective attractiveness from night to night, but the trap was always successful.

Amongst the noctuae the Leucanias were the most interesting. Of *Leucania vitellina* Hübn. we saw twelve, mostly in the trap, but sugar and ivy were occasionally rewarding; the moths varied in colour from pale uniform yellow to rich mottled orange, and in condition from much-worn to mint. *L. l-album* L. was very common at both ivy and sugar and numerous also in the trap. There were four *L. unipuncta* Haw., two at ivy and one each at sugar and mercury vapour light. *Plusia gamma* L. was abundant by day wherever we went, and one night proved to be excessively numerous in the trap. There were several *Agrotis ipsilon* Hufn. and a few *Peridroma saucia* Hb. *Aporophila australis* Bdv. included some very dark variegated forms, and *A. nigra* Haw. was very plentiful.

Three *Lithosia quadra* L. males came to light and there was one female *Nycterosea obstipata* Fab. at ivy blossom. All together we saw 25 *Rhodometra sacraria* L., all in fresh condition, six of them at mercury vapour at Penzance, and of the rest 3 were seen at ivy and valerian blossom. The only migrant micros known to us were *Nomophila noctuella* Schiff. which was numerous, and *Pyrausta martialis* Guen. (*ferrugalis* Hübn.) of which we saw odd ones.

# Lepidoptera Collecting in East Anglia, May and June 1961

By C. J. GOODALL, M.B., B.S.

Having only recently begun serious collecting again since my young days, there are a number of well-known localities which I have not yet had the opportunity to visit. One of these, or rather, several within a reasonably compact area, was East Anglia. I therefore decided to make two short visits to this region in 1961. I would have preferred a longer time interval between them, but circumstances would not allow this. Consequently, I chose the Whitsun Holiday, 20th to 24th May; and 19th to 25th June.

Accordingly I set off by car early in the morning of 20th May, and arrived in Cambridge in the mid-afternoon, where I had arranged to meet Mr. B. O. C. Gardiner, who had kindly obtained permits for me to visit the National Trust reserves of Wicken and Chippenham Fens. Permits for Woodwalton Fen, Holme Fen, and Monkswood had previously been granted by the Nature Conservancy.

Mr. Gardiner was good enough to entertain me at his home, and showed me over his Field Research Station, where he is carrying out some remarkable breeding experiments with large numbers of *Pieris brassicae* L. He also breeds numerous *Papilio machaon* L. which are released each year at Wicken Fen.

That evening we visited Woodwalton Fen, where we called on the Warden, Mr. G. Mason, who kindly escorted us to the pleasant rustic bungalow built in the middle of the Fen by Lord Rothschild, and now used as a meeting room for field workers of the Nature Conservancy and others.

The weather was not very propitious; a cold north-east wind of moderate intensity was blowing, with a temperature of only 50° F. on our arrival, dropping to 47° F. by midnight. Fortunately constant cloud cover prevented a further drop.

We commenced activities with a Mercury Vapour lamp and sheet in an open area to the north of the bungalow at 10 p.m., and continued until midnight, when Mr. Gardiner left for home. I connected the generator to my Robinson mercury vapour trap and left it running all night, while I slept in my car, feeling tired after my 250-mile drive from Morecambe.

Visitors to the sheet on this occasion were not numerous, and nothing of much interest turned up until about 11.30 p.m. when a male *Hydrillula palustris* Hübn. in excellent condition appeared, and was rapidly boxed. No further examples of this rarity appeared that night, however. Among other species noted were *Pheosia tremula* Clerck, *Diarsia rubi* View., and *Chiasmia clathrata* L., which appeared in some numbers together with single examples of *Notodonta ziczac* L., and *Lophopteryx capucina* L.

The next morning the weather showed little change, and the cloud and cold wind persisted. A search was made for *Carterocephalus palaemon* Pall. of which Mr. Mason had seen an example a day or two previously, but the only Lepidoptera seen were a female *Anthocharis cardamines* L. and two male *Ematurga atomaria* L., all flying along the banks of the main "drain."

At night I again tried the mercury vapour light and sheet, this time at the opposite end of the open area, which I thought would be more sheltered. This proved to be the case, and the wind, which had dropped considerably, was hardly noticeable. The cloud largely persisted, but the temperature range was much as on the previous night, 50-48° F.

The lamp was started at 9.45 p.m. and continued until 1 a.m., when I retired to the comforts of the Lion Hotel at Ramsey, the landlady of which greeted me with the question, "did you get any *palustris*?"! In contrast with the previous evening, a steady stream of moths appeared, of numerous species, and I was delighted to be able to inform the lady that I had indeed taken three perfect specimens of this moth, all males.

Among other species were many *Hadena thalassina* Schiff., *Diataraxia oleracea* L., *Unca triplasia* L., *Dysstroma truncata* Hufn., and *Hydriomena ruberata* Frey., together with singletons of *Smerinthus ocellata* L., *Drepana falcataria* L., *Discestra trifolii* Hufn., *Agrotis puta* Hüb., *Apamea unanimis* Hüb., *Cucullia umbratica* L., and *Lobophora halterata* Hufn. The species seen on the previous night also appeared in considerable numbers.

Mr. Mason very kindly allowed me to run my Robinson trap in the garden of his house, just beyond the boundary of the Fen. Species present included *S. ocellata*, *Cynia mendica* Clerck, *Pterostoma palpina* Clerck., *A. unanimis*, *Apamea sordens* Hufn., *Eumichtis adusta* Esp., *Ceramica pisi* L., and, remarkably at so late a date, one example of *Lycia hirtaria* Clerck.

I left the Woodwalton area next day and motored to the Breck District, now almost completely changed in character by the Forestry Commission's extensive plantations of alien conifers. Small areas of deciduous woodland still remain, however, and I found one of these north of Brandon.

A suitable site for the mercury vapour lamp was decided upon, in a clearing with deciduous woods on two sides and conifers on the others. The weather was even colder than at Woodwalton, with temperatures in the range 45°-41° F., light cloud cover, and a very light north-west wind. Collecting was carried out with light and sheet until 12.30 a.m., when the trap was substituted and I retired to the car for a rest.

The number of moths appearing was again surprisingly large in view of the low temperature. Almost the first was a fine melanic *Hyloicus pinastri* L., a form which I am informed is of very infrequent occurrence, though it may be produced more often than formerly with the increase in this species as a result of the Forestry Commission's activities. Other species seen included *Notodonta trepida* Esp. (late *anceps* Goeze), *Dasychira pudibunda* L., *Hadena w-latinum* Hufn. (very numerous), *H. rivularis* Fab. (late *cucubali* Schiff.), *Meristis trigrammica* Hufn., *Calothysanis amata* L., *Cosymbia pendularia* Clerck, *C. porata* L., *Thera obeliscata* Hüb. (very numerous), *Euphyia unangulata* Haw., *Eupithecia lariciata* Frey., *Biston betularia* L. (two examples, one typical and the other f. *carbonaria* Jordan), *Pseudoboarmia punctinalis* Scop., *Ectropis extersaria* Hüb., and *Plagodis dolabraria* L.

The following night the same area was again worked, but although

the temperature and wind conditions were similar, a clear sky with the Moon entering the second quarter had a marked dampening effect, and very few moths came to light. The commonest species was *T. obeliscata*, and no other species of any interest were noted.

On the 24th I was due to return home, but on my way I called at Woodwalton Fen again for a last try for *C. palaemon*, as the weather had become warmer and there were some good sunny intervals. This time I was lucky enough to take one male of this species in very fresh condition, but no more were forthcoming. Mr. Mason later informed me that no other examples had been taken this year, and the same applied at Castor Hanglands near Peterborough, another Nature Conservancy reserve noted for this species.

My next visit to East Anglia, on 19th June, began on a different pattern, I went first to Southwold on the Suffolk coast, and set up my mercury vapour lamp on the small stretch of banked sand to the south, called the Denes. The weather was again unsatisfactory, with a clear sky, light westerly wind, and a rapid temperature drop from 55° F. to 45° F. At 11.45 p.m. a light mist and heavy dew developed, and operations were discontinued at 12.30 a.m.

In spite of these conditions, however, a fair number of moths visited the sheet, the most interesting of which were two examples of *Arenostola elymi* Treit. though surprisingly in rather worn condition. Of other species noted, the following may be mentioned: *Sphinx ligustri* L., *Harpyia bifida* Brahm. (late *hermelina* Goeze), *Philudoria potatoaria* L., *Agrotis vestigialis* Hufn., *A. ripae* Hüb., *Leucania comma* L., *L. litoralis* Curt., *Heliophobus albicolon* Hüb. (common), *Pyrrhia umbra* Hufn., *Cucullia umbratica* L., and *Sterrhia seriata* Schrank.

The next day I went inland to Stowmarket, where I called upon Mr. H. G. Chipperfield, who very kindly offered to take me to an area near Mildenhall which is still a remnant of unspoiled Breckland. He hoped to show me *Anepia irregularis* Hufn. as it visited the flowers of viper's buglos (*Echium vulgare* L.), but unfortunately we saw none. However, by walking through the long grass by the side of the road at dusk, we flushed several *Lithostege griseata* Schiff.

We started the mercury vapour light at about 9.30 p.m.. The sky was cloudy, but cleared an hour before we ceased activities at 2.30 a.m. The temperature, which had been 60° F. at 7 p.m., had dropped to 45° F. by this time. Good numbers and a diversity of species visited the light, including four *H. pinastri*, one of which, found sitting on the underside of the sheet when packing up, showed exceptionally heavy black markings. *Heliophobus calcatrippe* View. (late *saponariae* Borkh.) was particularly common and in excellent condition. *H. albicon* also came in freely, as did *S. ligustri*, *Deilephila porcellus* L., *A. vestigialis*, *Rusina ferruginea* Esp. (late *umbratica* Goeze)—mostly females, and *Eupithecia subumbrata* Schiff. Among other species were *Drymonia dodonaea* Schiff. (late *trimacula* Esp.), *Lithosia complana* L., *Hadena w-latinum* Hufn., *H. lepida* Esp., *Hada nana* Hufn., *Discestra trifolii* Hufn. (a very pale form), *Pelurga comitata* L., *Epirrhoë rivata* Hüb., more *L. griseata*, and the Plume *Oxyptilus distans* Zell.

The next morning turned out to be sunny and warm, and after a hearty breakfast with Mr. and Mrs. Chipperfield, who were kind enough to put me up for the remainder of the night, I visited a wood near

Needham Market on their advice to obtain a new series of *Melanthia procellata* Schiff. This was done, but few other Lepidoptera were noted.

After enjoying Mr. and Mrs. Chipperfield's hospitality for lunch I again returned to the area of Breckland worked the previous evening, this time searching the rare Spanish catchfly (*Silene itites* Wibel) which is the foodplant of *A. irregularis*. I found two small larvae and put them in a plastic bag together with some pieces of the stem and flowers. On my return home I transferred them to flowers of garden Pink, as recommended by Mr. Chipperfield, and found that they took avidly to these, feeding up rapidly. Both are now in the pupal state. I also flushed two more *L. griseata* at dusk, but found nothing else of interest.

On starting the mercury vapour lamp at 9 p.m. the weather was rather cloudy but fairly warm, and the temperature never dropped below 55° F. up to 1 a.m., when I switched off the generator. Nevertheless, fewer moths appeared than on the previous night, the only new species noted being *Hadena conspersa* Schiff., *Sterrhia interjectaria* Boisd. (late *fuscovenosa* Goeze), *S. dimidiata* Hufn., and *Anagoga pulveraria* L. Next morning I searched posts and tree-trunks for *H. irregularis* but was again unlucky, the only species found being a single example of *Hadena bicolorata* Hufn. (late *serena* Schiff.).

I then made my way to Newmarket, and after booking in at an hotel, visited Chippenham Fen. It was late afternoon when I arrived, and very few Lepidoptera were flying; however, I succeeded in flushing an example of *Sterrhia muricata* Hufn. from an area of cut reeds, followed by a number of *Eustrotia bankiana* Fab. (late *olivana* Schiff.), and several *E. atomaria*.

The weather was warm and sunny with a light to moderate south-west wind, and the sky continued clear during the night, resulting in a drop in temperature to 42° F. by 1 a.m.

At 9 p.m. I met Mr. Gardiner, who had motored from Cambridge, and we were later joined by the Rev. Mr. Guy Ford. The mercury vapour light was switched on at 10 p.m. in an area of cut reed-beds protected from the wind by trees to the south. Results were not very good, though several species new to me appeared. Examination of rush-heads and patrolling the droves with a paraffin pressure lamp yielded fair results, including numbers of *Leucania pudorina* Schiff. and *Zanclognatha cribrumalis* Hufn., the latter being the commonest species seen. At the sheet these species were also noted, together with *Lithosia lurideola* Zinck., *Apatele megacephala* Schiff., *Craniophora ligustri* Schiff., *Diarsia brunnea* Schiff., *Heliothis maritima* de Gras., *Arenostola fluxa* Hübn., *Lithacodia fasciana* L. (late *pygarga* Hufn.), and *Phragmataecia castaneae* Hübn. Of these, only *A. fluxa* appeared in any numbers.

The following day I motored to Woodwalton Fen, where I was again kindly greeted by Mr. Mason, who rendered every assistance during the next two days. Operations with the mercury vapour lamp were commenced at 10 p.m. on a drove somewhat to the north of the bungalow in rather unsatisfactory weather conditions, with a clear sky, the Moon in the second quarter, and little wind, resulting in a heavy dew and a rapid temperature drop to 50° F. *Z. cribrumalis* was again common, as were *Sterrhia dimidiata* Hufn. and *Spilosoma lutea* Hufn. Other species seen at the light in small numbers were *Pterostoma palpina* Clerck.,

*Thyatira batis* L., *L. pudorina*, and *Nola cuculatella* L., while walking along the droves with a paraffin pressure lamp yielded one *Thumatha senex* Hübn., and a number of *Sterrha biselata* Hufn. The most interesting species seen, however, was an example of *Perizoma sagittata* Fab., sitting on flowers of meadow-rue (*Thalictrum flavum* L.) at dusk on a small drove to the south of the main "drain". Unfortunately it flew away before I could capture it.

The Robinson trap was again run in Mr. Mason's garden, and yielded *Apamea infesta* Ochs. (late *anceps* Hübn.), *E. adusta*, *C. pisi*, *Dypterygia scabriuscula* L., *R. ferruginea*, *P. umbra*, and *Lygris pyraliata* Schiff.

I determined to spend the next day looking for *Strymonidia pruni* L. in Monkswood, not far from Woodwalton Fen. The weather turned out to be very warm and sunny, and I set out with high hopes. However, the Warden informed me that this butterfly had so far been extremely scarce this year, and this proved to be the case. Very few were seen, and these mostly high up over the larger Blackthorn bushes. Nevertheless, one female did succumb to my net by venturing too low into the ride. The only other species of interest seen was an example of *Limentis camilla* L.

That evening I again set up my mercury vapour trap on Woodwalton Fen, this time near the clumps of Meadow-rue on which I had seen the *P. sagittata* the previous night. Also working the Fen were Mr. M. J. Leech and a companion, who operated their mercury vapour equipment in the open space to the north of the bungalow. The weather had now settled down to a warm spell, with light cloud cover and a light southerly wind. The temperature was 73° F. when operations were commenced at 9.30 p.m., and even at 1 a.m. had not dropped below 60° F.

I examined the meadow-rue again at dusk and was delighted to see a *P. sagittata* once more sitting on the flowers. This time I succeeded in capturing what proved to be a female in excellent condition. Careful search at intervals later, however, failed to reveal any further examples, and none came to the light. The latter, nevertheless, attracted large numbers of moths including *Smerinthus ocellata* L., *P. palpina*, *T. senex*, *L. pudorina*, *A. fluxa*, *Z. cribrumalis*, and *Campaea margaritata* L. in considerable profusion. Odd examples of *Gastropacha quercifolia* L., *Apatele leporina* L., *A. megacephala* Schiff., *L. fasciana*, *Mysticoptera sexalata* Retz., and *Epione repandaria* Hufn. were also recorded at the sheet, while two *Anticollis sparsata* Treit. were netted while flying along a drove. Mr. Leech's light, in addition to many of the above species, was also visited by a number of *Lygephila pastinum* Treit.

Examination of the trap in Mr. Mason's garden next morning revealed a large catch, species present including *A. infesta*, *E. adusta*, *L. pudorina*, *A. fluxa*, *Caradrina alsines* Brahm., and *Perizoma bifaciata* Haw.

I returned home on the 25th, well pleased with the results of my activities. 1961 seems to have been generally regarded as a poor year for Lepidoptera in this country, but from my personal point of view the opposite has been the case. I hope to publish a further article on collecting in Cornwall and Kent in late September, at a later date.

Finally, I would like to express my thanks to the Nature Conservancy and the National Trust for granting me permission to collect in their Reserves, and my appreciation of the assistance so liberally given by the Wardens of Woodwalton Fen and Monkswood.

## Gregarious Behaviour in Two Species of *Scatopse* (Diptera : Scatopsidae)

By P. ROPER

On 5th October 1961 I was collecting in a small wood here at Robertsbridge when I was surprised by a veritable cloud of *Scatopse picea* Mg. that appeared when I shook a small hazel bush. Despite the large number of these insects present, no other examples were seen during the entire trip, and it seemed likely that there was some specific attraction about this particular hazel bush. An examination was made, and although many flies could be seen resting amongst the branches and foliage, the only place where they were noticeably active was around a sprig of small, dry, and woody alder catkins of the sort that resemble miniature fir-cones. These catkins must have been blown into the hazel during one of the windy days we were having at the time. Many examples of both sexes of *S. picea* were running in, on, and around the catkins with evident interest, and even after the twig had been taken home several insects remained well in amongst the woody scales. A close examination of the catkins under a microscope revealed nothing unusual.

The following day I returned to the spot where the insects were found to discover that they had moved some ten yards up the wood and now had their headquarters in the lower branches of a hornbeam. No alder catkins were to be seen there and a subsequent examination of a nearby row of alder trees produced no further specimens. One might imagine that the previous days insects had been interested in the catkins for the shelter they might provide, but if this is the case there must be some special quality about them as no flies could be found in curled leaves or bark crevices. Since their specific name is latin for a spruce, I also had a look at various fir-cones from trees in the area, but with negative results.

A short while later on the same day (6.x.1961) I was working along a hedge when I again disturbed a cloud of Scatopsids from a bush. They were of a different species—*S. flavicollis* Mg.—but were behaving in a very similar way. When disturbed they would emerge from the bush for only a short while and virtually all of them appeared to return to it rather than take off across the field as other insects seem to do. As with *S. picea*, no satisfactory explanation could be found for this gregarious behaviour, but it did put me in mind of another Scatopsid, *Psectrosciara tenuicauda* Duda., which is reported as swarming at mid-day on sunlit fence-posts, and which I have seen swarming (in the air) by my house, only a foot or two from the wooden walls. Perhaps other examples of this behaviour amongst the Scatopsidae will come to light in the future.



## Notes on the Microlepidoptera

By H. C. HUGGINS, F.R.E.S.

***Pempelia dilutata*** Hübn.: Although usually considered a chalk or a limestone insect, this moth is often found on other soils where wild thyme grows freely. I have found it in plenty on sand, and in 1961 it was, though uncommon, especially fine on shale on the Dingle peninsula in Kerry.

I am writing of it more especially to draw attention to the races found in the west of Ireland. When I first began to look into these in 1961 I fancied, from their size and brilliance in colour, that the Irish insects would prove a good subspecies. Through the kindness of Mr. Whalley, however, I have been enabled to go over the extensive series in the British Museum (Natural History Section) and find that as the range of the moth moves to the west it becomes steadily larger and more brilliant. This is a characteristic of one or two other species amongst the Phycitids, *Euzophera consociella* Hübn. in south Wales and Cornwall is much larger and brighter purple in colour than elsewhere. When Barrett first took this form he considered it might prove to be *E. sodalella* Zell., but he subsequently revised his opinion and stated it was undoubtedly *consociella*. The late L. T. Ford caught a number of this race in south Cornwall.

I have seen many *dilutella* from Kent and Sussex, where it is common on both North and South Downs, and also from Farley Mount near Winchester, where the late W. S. Gilles and I found it to be abundant. All these were small rather dull insects, the largest being no more than 19 mm. in expanse. Their ground colour varied from light to purplish fawn, and the markings were dull whitish. Specimens in the Bankes series from Purbeck are appreciably larger and the white markings clearer against a darker background, and others from Devon larger still and more definitely marked.

Mr. E. S. A. Baynes has recently taken *dilutella* at Kilinaboy in the Burren, and Mr. J. D. Bradley also took several near Ballyvaughan in 1952. All these are larger insects, averaging 22 mm. in expanse; their ground colour is a clear reddish-fawn with enlarged and brilliant white markings. At first sight I thought the one referred to me by Mr. Baynes was *P. ornatella* Schiff., to which it bore a very strong resemblance, but on examining it more carefully I found it was undoubtedly a very large brilliant *dilutella*, and the other Burren insects I have since seen are the same. Curiously enough, the only Burren *ornatella* I have seen, also taken by Mr. Bradley, was no larger than these, whereas in Kent, *ornatella* is at least 3 mm. wider in expanse.

The climax of the Irish *dilutella*, however, seems to be reached at Dingle, where, however, it appears to be scarce. Mr. Baynes and I took two on the cliffs near Slea Head on the night of 6th July at light, and a third was taken at mercury vapour light in Dingle itself on the night of 7/8th. These are all very large, one in particular being slightly larger than my largest *ornatella* from Kent, and are of a deep maroon purple in colour. On this ground the chalk white markings, which are more enlarged in one specimen than in any other I have seen,

stand out most brilliantly. These three were all we took. I had no mercury vapour trap with me so got no more by this method after Mr. Baynes left me, and the weather broke the next day, so that although I visited Slea Head once again by day, the thyme beds were all rain soaked, and I did not succeed in flushing any.

## Notes and Observations

**THE EGG STAGE OF *THERA COGNATA* HÜBN.**—Last August I knocked a female *Thera cognata* Hübn. from a Juniper bush at Aviemore and almost 20 eggs were laid. These have just hatched (3rd November). On consulting the handbooks I find that Barrett assumed the species passed the winter as an egg; Newman and Leeds reckon the egg is hatched by August; Scorer omits any reference to the egg but shows the larva from September to June; the current edition of South says simply that the larva feeds in May and June; Wilson says March to June; Prout (in Seitz) says April to June.—G. HAGGETT, 1 Torton Hill, Arundel, Sussex. 10.xi.1961.

**CUCULLIA VERBASCI L. ON BUDDLEIA.**—On pages 217 and 218 of the October issue, under Seasonal Notes, Dr. F. H. N. Smith makes mention of having found larvae of *Cucullia verbasci* L. (mullein shark) swarming on ordinary purple buddleia. During a holiday spent many years ago at Crantock, near Newquay, my wife and I found many larvae of this species on *Buddleia* in the front garden of the place where we were staying. At the time I reported this to Mr. L. W. Newman, the father of L. Hugh Newman, who subsequently informed me that he thought I must have been mistaken, as never before in his experience had he ever thought of *Buddleia* as a foodplant of this species. I successfully reared a series on *Buddleia* and believe that afterwards Mr. Newman was convinced that I was correct.—F. W. BYERS, 59 Gurney Court Road, St. Albans, Herts. 27.x.1961.

**CIRRHIA OCELLARIS BORKH. IN S.E. LONDON (N. W. KENT).**—A male, in very good order, of this uncommon species came to my m.v. lamp on the night of 23-24th September 1961—a night that should have been very productive, being still, cloudy, and mild. (A slight mist, however, may have cut out some of the light, for nothing else really notable turned up.) The specimen has the cross lines and stigmata strongly marked, which form, I understand, is the more usual one here; it bears little resemblance to the very pallid insect with obsolete markings figured in the old edition of 'South'—a foreign example. Mr. J. M. Chalmers-Hunt tells me that this is the first capture of *ocellaris* in West Kent for many years; de Worms (1956, *The Moths of London and its Surroundings*, 3: 55/111) cites, for this century, Bexley (1908) and Sidcup (1923). Its present headquarters near London appear to be in Surrey—roughly, the area between Wimbledon and Weybridge; further out, the Breck district of East Anglia. The nearest poplars here are non-seeding 'stools' but there are some mature trees, both black and Lombardy, scattered about at a little greater distance. However, on the basis of a single specimen it is not possible to say whether the moth was a vagrant or one of a resident colony.

In passing I may mention that on the same night *Phlogophora meticulosa* L. was present in great, and to me unprecedented, abundance; it has been by far the commonest species here this autumn, all others except *Thera obeliscata* Hübn. having appeared only sparsely—even *Plusia gamma* L.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 22.x.61.

ON THE OVERWINTERING- AND PUPATION-SITE OF ANTISPILA PFEIFFERELLA HÜBN.—I think it well to draw attention to a note on this subject by G. Elisha published as long ago as 1886 (*Ent. mon. Mag.*, 23: 13-14), as it appears to have been overlooked by most of our subsequent writers on the Tineina. His findings put it practically beyond doubt that the supposed difference in habit between the two British species of *Antispila*—as regards the location of the encased larva and pupa—rests, as he surmised, on some flaw in the original observation. This last was a statement by C. Healy (*Entom.*, 2: 129) that the larvae of *A. pfeifferella* convey their cases below the surface of the ground; it was repeated by Stainton (*Nat. Hist. Tin.*, 11: 310). Elisha, naturally wondering how a legless larva in a case could perform such a feat, tested the matter with a large brood and found, three months after they had finished feeding, many cases 'concealed between the decaying leaves in exactly the same way as with its congener *Treitschkiella*' and many others on the surface of the earth in the jars, but—though most carefully searched for—not one beneath the surface. Yet in spite of this clear evidence, the erroneous or at best extremely questionable statement of Healy seems to have been handed down uncritically from one author to another up to our own day (cf. Meyrick, 1895, 1928; Ford, 1949, etc.).—A. A. ALLEN, 63 Black heath Park, S.E.3. 22.x.61.

ANTHEROPHAGUS SILACEUS HBST. (COL., CRYPTOPHAGIDAE) NEAR CHARLTON, KENT.—In early June of last year I took a specimen of this rarity by sweeping on an extensive piece of waste land (now scheduled for building) between Blackheath, Shooters Hill, and Charlton, but somewhat nearest to the latter place. My previous exponent of the species was taken in a similar way in a lane bordering part of Windsor Great Park, a good many years ago. There are a few previous records for N.W. Kent (Darenth, Chatham, Gravesend). The usual *Antherophagus* in these areas, and in general easily the commonest of our three species, is of course *nigricornis* F.; but at Blackheath—or at all events in my garden—it seems to be replaced by the more local (and badly named) *pallens* Gyll. These beetles pass their early stages in the nests of humble-bees (*Bombus* spp.) and, as the generic name implies, frequent flowers. *A. silaceus* much resembles a small *nigricornis* but has on the fore body, especially the head, a thick pale pubescence very conspicuous when viewed in certain lights.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 23.x.61.

ADELA RUFIMITRELLA SCOP. IN S.E. LONDON (N.W. KENT).—On Whit Monday last, 22nd May, during a spell of warm sunshine in the early afternoon, I espied a small dark-looking moth flying gently, with a peculiar sort of spinning motion, over the grass and rough herbage in an uncultivated part of my garden; a stroke of the net secured it, and to my surprise and pleasure there was revealed one of the charming little metallic 'Longhorns'. (No member of the Adelidae had ever before

occurred to me in the district except *A. viridella* in the woods on Shooters Hill a few miles away, nor did it seem at all likely that any would occur.) No sooner had I boxed it than two more appeared and were duly accounted for, and before long a fourth—all in nearly the same spot. It was evident that the species must be the local *Adela rufimitrella* Scop., one I had nowhere previously encountered, and that its presence could be attributed to the few plants of *Cardamine pratensis* which come up here and there each spring under, or not far from, the western wall of the garden where it is relatively moist and undisturbed. (Even so, I should hardly have expected it to breed on such scattered, short-lived plants—their flowers were then already over and by June they become quite smothered by long grass, etc., and seem to die down entirely.) The sky soon clouded over, and probably for that reason I saw no further specimens in this small area; but when later the sun re-appeared for a few minutes, one more was netted at some distance on another wild patch where one or two plants of the cuckoo-flower grew. Though keeping a sharp look-out whenever possible, I met with only one further example, on the 28th of the month, flying over a bed of mint between the other two sites—making a total of six, all in fine condition.

Despite its slow steady flight, the insect is far from conspicuous on the wing except when its green-gold scales happen to catch the sunlight. I never saw it settle, and flowers (said to attract most of the group—plenty of buttercups were at hand) seemed to hold no interest for it. I was frequently using the sweep-net over much of the garden at the time but never got the *Adela* in this way; probably its short flight-period, not or hardly lasting into June, contributes to the fact of its being rather seldom noticed. I believe that *A. rufimitrella* has rarely, if ever, been found quite so close to London before, in recent times at all events; but there are two oldish records for this district (Lee and Eltham, just east of here) and one a little further out (Bexley), all by B. A. Bower, in "Woolwich Surveys" (1909).—A. A. ALLEN, 63 Blackheath Park, S.E. 3. 21.x.61.

ARGYRESTHIA SORBIELLA TREITS. ON SORBUS ARIA IN KENT.—An *Argyresthia* which I met with not uncommonly amongst whitebeam on Shoreham Downs, W. Kent, on 21st June 1957, was found to agree perfectly with the descriptions of the above species and later verified as such by Mr. S. Wakely. The occurrence is interesting on two counts: firstly, *A. sorbiella* is not regarded as a south-eastern species in Britain but is—mainly at all events, as Mr. Wakely confirms—northern, with the addition of a few southern counties (Meyrick, 1895) of which Berks. is the most easterly. This, therefore, has a chance of being the first Kent record, but without having searched the literature I do not assert it as a fact. Secondly, it is noteworthy that the species is considered only as a rowan-feeder, at least with us (cf. Ford, 1949, *Guide Small. Brit. Lep.*: 136), though *A. conjugella* Zell.—the usual rowan-feeding *Argyresthia* in this part of the country—has been connected also with whitebeam (*l.c.*). I did not find *conjugella* at Shoreham and noticed no *Sorbus aucuparia* on the downs there, whereas *sorbiella* was invariably disturbed from trees of *S. aria* or their immediate neighbourhood, so that little doubt can be entertained about its foodplant in that locality.—A. A. ALLEN, 63 Blackheath Park, S.E.3. 21.x.61.

**EUPITHECIA INNOTATA HUFN. ON SEA BUCKTHORN.**—I was very interested in the articles on the above species feeding on Sea Buckthorn in "The Record" for October. I first took a "pug" which I assumed must be *E. innotata*, on the North Somerset sandhills in June 1951, and subsequently obtained a number of similar specimens at dusk in the same locality in June and late August and September in 1951 and subsequent years. I have, however, never tried to breed the species, and did not realise that it was breeding on Sea Buckthorn until I read the articles mentioned above. Sea Buckthorn is abundant in the locality, and I have no doubt whatever that *E. innotata* does breed on it now. I thought that this note might be of some interest on the question of the distribution of this species.—C. S. H. BLATHWAYT, Amalfi, 27 South Road, Weston-Super-Mare. 26.x.1961.

**EUPITHECIA INNOTATA HUFN. IN YORKSHIRE.**—The discovery of this Pug in Yorkshire is due almost entirely to the study of "The Record". The sequence of events which lead to this addition to the County list, start from another new record. In his list for the Spurn Peninsula published in "The Naturalist" for October 1951, H. N. Michaelis recorded a single specimen of *Semiothisa alternaria* Schiff. which so far appears to be the only record for the County. With the publication of the finding of this moth feeding on Sea Buckthorn on the South Coast (S. Wakely, *Ent. Record* 1958, p. 93) this took on a new significance.

On 7th August 1960, I visited Spurn with Mr. E. Richards of York and between grubbing for *A. ripae* and searching for *A. asteris*, both of which were plentiful, we beat the Sea Buckthorn bushes intensively. Our bag was about a dozen small green geometer larvae from which we each obtained two or three small pupae. I suppose it was mainly wishful thinking that stopped me following up the feeling that they were really too small for *alternaria*! In due course various Pugs hatched and were set to await identification during the Winter.

At this stage the October 1961 *Record* arrived, and the article by Percy Cue on page 210 sent me scurrying back to my 1961 Pugs. Sure enough one was easily recognised as *E. innotata*, I should add here that Mr. Cue's description of the larva and the pupa agreed perfectly with those I had bred. I therefore showed my specimen at the recent meeting of the Yorkshire Naturalist's Union, and when Mr. Richards produced a similar specimen that he had bred, any lingering doubts were finally dispelled.—C. I. RUTHERFORD, 24 Oakdale, Harrogate, Yorks. 31.x.1961.

**MIGRANT MOTHS AT WESTON-SUPER-MARE.**—It may be of interest to record single specimens of the following migrants, which occurred in my mothtrap in my garden: *Leucania vitellina* Hübn., 17th September; *Cosymbia pupillaria* Hübn. (5th October), and *Heliothis armigera* Hübn. (14th October).

The following northern species also occurred in my trap: *Hadena bombycina* Hufn., 14th May; *Calostygia salicata* Hübn., 8th August; *Entephria caesiata* Schiff., 11th July. I have had specimens of the first two of these normally Scottish and northern English species in my trap in this garden, but this is the first occasion on which I have taken *E. caesiata* at Weston, although it does occur very locally on Exmoor.—C. S. H. BLATHWAYT, 27 South Road, Weston-Super-Mare. 26.x.1961.

A NEW ATTRACTION FOR MOTHS.—On the 5th October 1961, a moth entered the lighted bathroom of my house, flew around for a while and then disappeared. Later on I found a Beaded Chestnut *Agrochola lychnidis* Schiff. feeding on some toothpaste which had been exuded from the seam of its tube. In the morning the moth was found dead on its back on the window-sill.—H. E. CHIPPERFIELD, 27 Chilton Avenue, Stowmarket, Suffolk. 2.xi.1961.

TRICHIUS FASCIATUS (L.) IN PERTHSHIRE AND ROSS-SHIRE.—A party of entomologists consisting of K. H. Bobe, P. LeMasurier, L. Parmenter, L. G. F. Waddington and myself visited Perthshire in 1955. On the 11th July we stopped at the east end of Loch Tummel to admire the view, and by the roadside on a patch of Melancholy thistle *T. fasciatus* was abundant. I collected six specimens.

In 1956 the same party, all but L. Parmenter, were in Ross-shire. *T. fasciatus*, in company with *Potosia cupera* (F.), was found on 15th July about six miles north of Garve at Longart Forest (not marked on the O.S. maps, as it is a recent Forestry Commission site).

This beetle may be more widespread than we think, is it the recorders that are rare?—B. L. J. BYERLEY, 3 Courtfield Crescent, Harrow, Middx. 18.ix.1961.

GRAPHOLITA OROBANA TREITS. IN EAST KENT—A PROBABLY NEW COUNTY RECORD.—While collecting at Sandwich on 21st July 1957, in company with my friends Messrs. Wakely and Chalmers-Hunt, I netted a boldly-marked Tortrix of unfamiliar aspect. The situation was a shallow, moist depression, filled with dwarf willow, in the open ground behind the sandhills. The determination as above has been corroborated by Mr. Wakely. (I noticed no *Vicia sylvatica* in this spot, but may of course have easily overlooked it). On this or another occasion, Mr. Chalmers-Hunt took on the same ground some moths thought at first to belong to the species, but which, on seeing them not long ago, I considered rather to be *Pammene populana* F.; however, a specimen since caught by him at Ham Fen, near Sandwich, pointed out to me at the same time, is undoubtedly another *orobana*.

The occurrence of this very local species in a south-eastern county, as far at least as I could ascertain, seems hitherto unrecorded. Mr. H. C. Huggins, who for many years has collected the Tortrices, especially in East and North Kent and South Essex, informs me that he has neither met with it himself in those areas, nor knows of anyone having done so. Little appears to have been added to our knowledge of its British range since Barrett, in 1907, recorded it from coastal cliffs near Scarborough, the Cambridge fens, Norfolk and Dorset. Its headquarters or best-known locality to-day, Mr. Wakely tells me, is Wicken Fen. This is perhaps interesting in view of its capture at Ham Fen (see above)—a southern remnant of the same type of habitat where certain fen insects are still to be found. It seems highly probable that *G. orobana* is an ancient survival in this corner of Kent, which has previously escaped notice through its localization and rarity, rather than a recent arrival by southward spread from East Anglia.—A. A. ALLEN, 63 Blackheath Park, S.E. 3. 23.x.61.

LIMONIA (METALIMNOBIA) QUADRIMACULATA L. (DIPT., TIPULIDAE) IN BERKSHIRE.—This large Limnobiid has previously been known from Epping Forest, Essex, and the New Forest, Hants. Dr. F. W. Edwards in his "British Short-palped Crane Flies" *Trans. Soc. Brit. Ent.*, 1938, 5: 23; records it for April and May and its breeding habitat "in large fungi". Mr. R. L. Coe, when dealing with the Tipulidae in the *Royal Ent. Soc. "Handbook for the Identification of British Insects IX Pt. 2"*, mentions the same counties, but extends the flight time to include June and August. In 1941 Mr. Coe in his "Some breeding records of British Tipulidae (Dipt.)" in *Ent. Mon. Mag.*, 77: 172; stated "Essex, Epping Forest, larva in fungus (*Polyporus schweinitzii* Fr.) xi.11, fly em. 9.i.12 H. St. J. Donisthorpe; same locality and habitat, larva v.21 C. L. W. [ithycombe]".

On 3rd June, when collecting in Windsor Forest with Messrs. C. N. Colyer and C. O. Hammond, I swept my net over some fungi under beech trees and captured a male of this species with a wing length of 18 mm. Thus once again a rare insect has been found to occur in each of these three old forests of southern England. The other species in this sub-genus in Britain, *bifasciata* Schr. and *quadrinotata* Mg. have both been reared from fungi.—L. PARMENTER, 94 Fairlands Avenue, Thornton Heath, Surrey.

AN ENTOMOLOGICAL MYSTERY—A FURTHER NOTE.—Following the publication of my note (*Ent. Rec.*, 73: 134) concerning the occurrence of *Mellicta aurelia* (Nickerl) bearing Surrey data, I have had a considerable correspondence with Mr. R. M. Long (now living at Horsham), whose name appeared on the labels of the insects concerned. He assures me that:—(a) he never took any *athalia*-like insects in Beddington, nor can he imagine them occurring in that area; (b) he never bred any *athalia* at the time concerned, viz. 1925; and (c) he denies responsibility for the labels, which I sent him for his observations. He has let me in return see examples of labels written by him at that time and I agree that those occurring on my *aurelia*, though bearing similarities in the formation of some letters, e.g. the 'D's in Beddington, are definitely by another hand.

I was pleased to see the note in the current issue of the *Record* by Mr. Huggins giving his comments on the problem. So far as concerns the origin of the butterflies he is quite likely correct, but the explanation for the data labels remains as much a mystery as before.

I should like to take this opportunity to refute any implications of Mr. Long's *non bona fides* which may have been read into the final sentence of my original note on the subject. No such implications were intended and my remark was merely to emphasise how essential it is for true and accurate information to be put on labels.—Dr. NEVILLE L. BIRKETT, 3 Thorny Hills, Kendal. 23.xi.1961.

#### UTETHEISA PULCHELLA L. AND OTHER MIGRANT MOTHS IN WEST SUSSEX, 1961

*Nycterosea obstipata* Fab. was present most week-ends when the trap was run from June to October with sometimes as many as fifteen moths in the trap. During early September there were masses of *Plusia gamma* L. and *Amathes c-nigrum* L. with a few *Caradrina ambigua* Schiff., which in Sussex can still vary greatly in numbers from year to

year. Of *Agrotis ipsilon* Hufn. and *Peridroma saucia* Hb. there were one or two per night during September. Only two *Macroglossum stellatarum* were seen on 30th August and 10th September.

Amongst the less common species there was at Arundel: *Leucania albipuncta* Haw. on 31st August, and *L. vitellina* Hübn. on 7th October. At Pulborough, one female *vitellina* had come to the trap on 19th May, with two others on 23rd September. A male *Utetheisa pulchella* L. came to the Arundel trap on 3rd August, and a male *Rhodometra sacraria* L. on 1st August.

G. HAGGETT and A. J. WIGHTMAN.

## Current Literature

*Cassell's new Atlas of the World*: CASSELL & CO., LTD., 130 + xviii, 13¼" × 9¼", £5 5s 0d. We live to-day in a rapidly changing world, and it is truer than ever to say that any publication on any branch of science is out of date before it reaches the public. It is even more true to say that in spite of this fact, no progress would be made unless such publications continue to appear, and the one under consideration brings us into line with the position at the beginning of 1961, which is a considerable advance. Of course the main changes are political, and an exceedingly useful index of place-name changes is included covering some 850 entries.

There is a section of world statistics, including an account of the solar system, star charts, the earth's structure, and various physical statistics. Historical maps show the important changes during the twentieth century.

Physical maps with the exception of Europe, are limited to continental maps, but the British Isles, Scandinavia, France and Spain, and central Europe, including Italy and the Balkans, are accorded physical maps of their own.

The political maps are drawn to reasonably large scale, and the printing is good. Especial credit is due to the lettering which is excellently clear and shows a clean edge under a magnifying glass, so that many place names can be given without undue congestion. There are 80 physical and political maps in the main section, followed by 30 economic maps, making a convenient atlas for home or office.—S. N. A. J.

*Lambillionea*, 60: 11-12, Dec. 1960, publishes a short obituary notice on Dr. Henry Beuret of Basle, by the editor. S. G. Kiriakoff describes from Madagascar a new genus and species of the Notodontidae, sent to him by M. Pierre Viette; a figure of the male genitalia is included. Ed. de Laever gives an account of a successful night's collecting at Torgny, and there is a paper in English by the late O. L. Colinette describing fifteen new Lymantriidae from the Congo, illustrated by a half-tone plate of eighteen figures, and Mr. Janmouille publishes a short note on the use of Benzyl phenol as a specific against mildew. 61: 1-2, February 1961, opens with an obituary notice of Edward



Schutze, the specialist on *Eupithecia*, by Ed. de Laever. Paul Marechal gives a condensed meteorological account of 1960, Mr. L. A. Berger writes on the enquiry into polymorphism in lepidoptera, and Mr. Kiriakoff describes five new species of Thyretidae (Lep., Notodontoidea) from central Africa with illustrations of the male genitalia. Nicolat Gillet of Tilff, Liege, commences an account of collecting and breeding in his district.—S. N. A. J.

*Alexanor*, 2: 2, R. Durand commences an account of a collecting trip to Greece; Y. de Lajonquière writes on papering insects, and G. Barragué records the capture of *Aglais urticae* L. in Algeria, apparently the first record from Africa. H. Decimon writes collecting notes and there is an interesting article on French *Boloria* by A. Crosson du Cormier and P. Guerin, with a half-tone plate of fifteen figures. G. Morie writes on a collecting bottle technique followed by an article by J. T. Betz on the subject of public lighting and the moth fauna. R. Olivier reports *Heteropterus morpheus* Pallas in the Calvados, and H. de Lesse contributes an article on the chromosomes of *Agrodiaetus dolus* Hübn. and allied species with a distribution map and illustrations of chromosome patterns.—S. N. A. J.

*Journal of the Lepidopterists' Society*, 14: 3, June 1960, opens with an article by Eugene Munroe and Paul R. Ehrlich on the higher classification of the Papilionidae. Roy O. Kendal records a new larval foodplant for *Erynnis zarucco* Lucas. Joseph Müller describes a new melanic form of *Catocala connubialis*, illustrated with a half-tone plate showing this variety, a brown-banded form and a normal specimen. The chromosome study of Kodo Maeki and Chas. L. Remington is continued, dealing with Nymphalinae, Charaxiinae and Libytheinae, with pattern figures and table of species with their chromosome counts. The portion for field collectors deals with a collecting trip in Japan by Kaiya Kubo.—S. N. A. J.

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6th October 1961.

THE EDITOR,  
Entomologist's Record.

Dear Sir,

While perusing my copy of Peterson, Mountfort, and Hollom's "A Field Guide to the Birds of Britain and Europe" (London, 1954), I began to think how valuable it would be to have such a convenient pocket guide to the butterflies of Europe. This book has proved indispensable to the European field ornithologist and, as is widely known, has now been published in most of the important European languages. The excellent little distribution maps show very well the range of each species in Europe, and have undoubtedly helped the average British birdwatcher out of his "parish-pump" outlook, enabling him to visualise the British distribution of each species in relation to its continental distribution. Similar maps in a field guide to the butterflies of Europe would prove just as helpful to British lepidopterists, of whom many, like myself, probably have only rather vague ideas as to the distribution of continental species.

Such a work on a group of insects as popular as the butterflies might be a commercial proposition, and could well prove nearly as successful as the Field Guide to the birds. It could be undertaken by a team of British lepidopterists, who have considerable experience of collecting on the continent, working under the auspices of *The Record* and in conjunction with those authoritative European lepidopterists who care to co-operate. It would also be hoped that some of the excellent entomological artists working in this country would co-operate in producing the coloured illustrations which would be the main feature of the book.

Apart from the illustrations, the proposed guide would include a small map for each species, showing its European distribution according to the latest information. The notes on each species in the text would be kept to a concise, but accurate, minimum.

Should such a Field Guide prove successful, it would be worth attempting the same for the moths, although this would naturally be a more difficult and more lengthy undertaking.

I have thought it worth putting forward this suggestion in the hope that it might find support from other entomologists. It might lead, as the Field Guide to the Birds has done with the ornithologists, to a greater interest in the butterflies of Europe among British lepidopterists and increased co-operation with our European colleagues, in keeping with these days of European Common Markets.

I am, Sir,

Yours faithfully,

J. F. BURTON,

c/o B.B.C. Natural History Unit,  
Broadcasting House, Bristol 8.

### THE NEW "SOUTH"

FROM AIR MARSHAL SIR ROBERT SAUNDBY, K.C.B., K.B.E., M.C., D.F.C.,  
A.F.C., D.L.

THE EDITOR, *The Entomologist's Record*

Dear Sir,

I have read with interest the reviews and comments on the new edition of South's "Moths of the British Isles". It is clear that there are a large number of errors in it, as I have found several myself in addition to those mentioned by the reviewers.

It is very important that these should be corrected in the next reprinting, and the simplest way to ensure this would be to ask everyone who notices an error or misprint or wrong plate reference to notify them to someone who would be prepared to collect and co-ordinate them, and in due course send them on to the publishers.

If you and others think that this would be a good plan, I am quite willing to act as co-ordinator. Notes of errors should be sent to me at the address printed at the foot of this letter.

Yours faithfully,

R. SAUNDBY.

Oxleas, Burghclere, nr. Newbury, Berkshire.

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It is with the greatest regret that we have to announce the death of Mr. J. O. T. HOWARD, one of the governing body of this magazine. It is hoped to publish a suitable obituary notice in the January issue.—ED.

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*Wanted.*—Living pupae or ova of *Pieris brassicae wollastoni* and *P. b. cheiranthi*, for experimental breeding. I should be very grateful to anyone holidaying in Madeira or the Canary Islands who can obtain even a few specimens. Will be glad to refund expenses of airmail and to supply specimens of any interesting crosses obtained.—Brian O. C. Gardiner, 43 Woodlark Road, Cambridge.

*For Sale.*—*G. quercifolia* (Lappet) Larvae, *A. villica* (Cream Spot Tiger) Larvae. 2/6 per dozen.—T. H. Fox, 28 Boxwell Road, Berkhamstead, Herts.

*S. Cameroons.*—Collector is open to receive commissions to collect, preferably Lepidoptera, Orthoptera, and Coleoptera, but would be prepared to consider other orders of Insects.—Please contact: M. L. Benson, P.O. Box 39, Victoria, S. Cameroons.

*For Sale or Exchange.*—*Cisbilamellatus* living male and female. Six for 2/- or exchange.—G. Wood, 102 Beaconsfield Road, Epsom Downs, Surrey.

**IRISH LEPIDOPTERA RECORDS.**—No comprehensive catalogue of Irish macrolepidoptera has been published since Lt. Col. C. Donovan's List in 1936. I am now engaged in the preparation of a revised List, and in order that it may be as up to date as possible, I should be most grateful for any records from lepidopterists who have collected in Ireland since the date of Col. Donovan's publication. Full acknowledgment will be made.

E. S. A. BAYNES

2 Arkendale Road, Glengearry, Co. Dublin, Eire



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## IMPORTANT JANUARY 1962 AUCTION SALE

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D. K. McE. KEVAN, Ph.D., B.Sc., F.R.E.S.; *Coleoptera*: A. A.  
ALLEN, B.Sc.; *Diptera*: L. PARMENTER, F.R.E.S., E. C. M. d'ASSIS-  
FONSECA, F.R.E.S.

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## TO OUR CONTRIBUTORS

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# The Entomologist's Record and Journal of Variation

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